

## Appendix A: Implementation Plan

## **Bradford Island Fish Sampling 2022 Implementation Plan**

Updated March 4, 2022

### **Background**

Bonneville Dam was authorized by the Flood Control Act adopted June 28, 1938 (Public Law No. 761, House Resolution No. 10618) and was the first dam constructed on the Columbia River. The site is a multipurpose facility that consists of the first and second powerhouses, old and new navigation locks, and spillway. Historical disposal practices resulted in electric equipment and other waste being placed in the river on the north shore of Bradford Island (Figure 1), including transformers containing PCB oil. In 2012, a Remedial Investigation (RI) report was completed (URS 2012) which summarized previous investigation activities that had taken place over the previous 10 years and used the data collected to identify source areas at Bradford Island, define the nature and extent of environmental contamination, and identify the contaminants of potential concern for human health and ecological receptors. The 2012 Remedial Investigation reported results from smallmouth bass and crayfish collected in 2008 and 2011, with elevated levels of PCBs in some fish and crayfish. Smallmouth bass tissue and tracking efforts were completed in fall of 2020. This field effort for spring of 2022 is intended to provide information on potential seasonal variability in tissue chemical concentrations and movement of smallmouth bass. The USACE has contracted with the U.S. Geological Survey (USGS) to collect smallmouth bass samples and evaluate the movements of smallmouth bass near Bonneville Dam using acoustic telemetry. This study is in support of a broader effort being conducted by USACE under the Comprehensive Environmental Response, Compensation, and Liability Act at Bradford Island. The fish tracking portion of this study will supplement the fall 2020 tracking study (Kock, et al., 2021). This document is an implementation plan that describes planned field activities for the 2022 study.

### **Implementation Methods**

#### *Fish collection for tissue analysis*

The USACE is planning to conduct tissue analyses on smallmouth bass, to determine if contamination persists for organisms living in the vicinity of Bradford Island. USGS has been tasked with collecting smallmouth bass for this effort. Sampling is planned for March and April 2022 and will occur within the River Operable Unit (OU) at Bonneville Dam (Figure 1). Smallmouth bass will be collected by angling. A total of 80 smallmouth bass are desired for tissue sampling and 40 for acoustic telemetry (Table 1). A minimum of 60 bass will be considered acceptable for chemical analysis in the event of diminished catch rates.

The spillway at Bonneville Dam is scheduled to be in operation beginning April 10, 2022, which precludes the use of boats to access areas immediately upstream of the spillway within the boat-restricted zone (BRZ) once spill begins. USGS will work closely with the USACE to obtain necessary permission and access credentials to operate within the BRZ as required to complete contracted activities during the study, and to identify desired sampling dates.

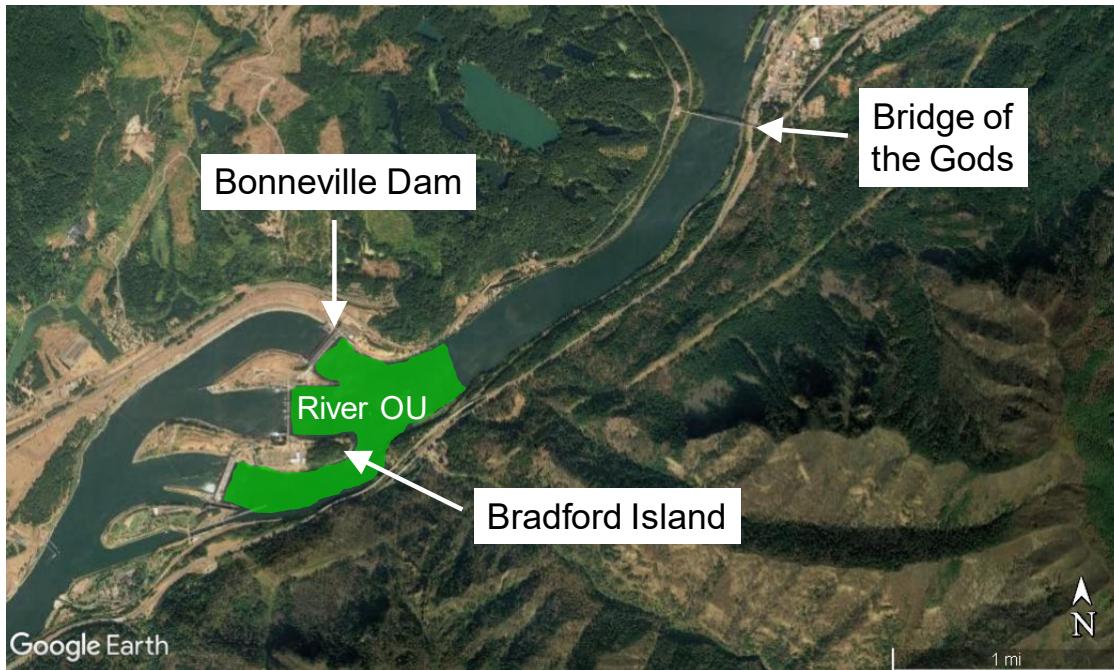


Figure 1. Image showing Bonneville Dam, Bradford Island, Bridge of the Gods, and the River Operable Unit (River OU).

Table 1. Target number of smallmouth bass to be collected for tissue sampling and for acoustic telemetry study near Bonneville Dam, 2022.

Species	Sampling location	Purpose	Number required
Smallmouth bass	River OU/Reference	Tissue sampling	80 (60 min.)
Smallmouth bass	River OU/Reference	Acoustic Telemetry	40

Angling for smallmouth bass will occur using two-person teams from USGS who may be accompanied by at least one USACE representative to assist with fish processing for tissue chemical analysis immediately following capture. Anglers will use lures or bait to collect smallmouth bass from within the River OU and the Reference Area (Figures 2 and 3). Non-target species collected by anglers will be immediately released at the capture location. The target sampling area within the River OU was chosen based on locations where bass were successfully caught in the past and are intended to be used as guidance for help in identifying locations to successfully catch bass. An effort will be made to focus fishing effort on priority areas identified in the QAPP and in Figure 2.

At the time of collection, individual fish will be immediately euthanized using the club method described in EPA (2000), externally marked with a sample label for individual identification with a unique identification number (see Section 2.1.3 of the QAPP) and measured for fork length to the nearest centimeter. Gastric lavage will be performed on all bass captured subject to chemical

analysis to eliminate potential influence of stomach content to analytical results. Stomach content will be retained from individual fish if sufficient mass is collected (minimum 40g). The remaining whole body of each fish (excluding stomach contents) will be wrapped in aluminum foil, double bagged, and placed in a cooler with ice and shipped to the laboratory, where it will be processed three times through a meat grinder prior to analysis. This is the same processing method that was performed on the fish from the fall 2020 sampling effort. Additionally, latitude and longitude of the collection site will be recorded for each fish. A USACE representative will take possession of collected smallmouth bass immediately, if present, or at the end of each angling day. USGS may request permission to conduct a limited set of catch-and-release test fishing events to identify areas where smallmouth bass are congregated and to determine if a particular bait or lure are more effective than others at sampling near Bonneville Dam.

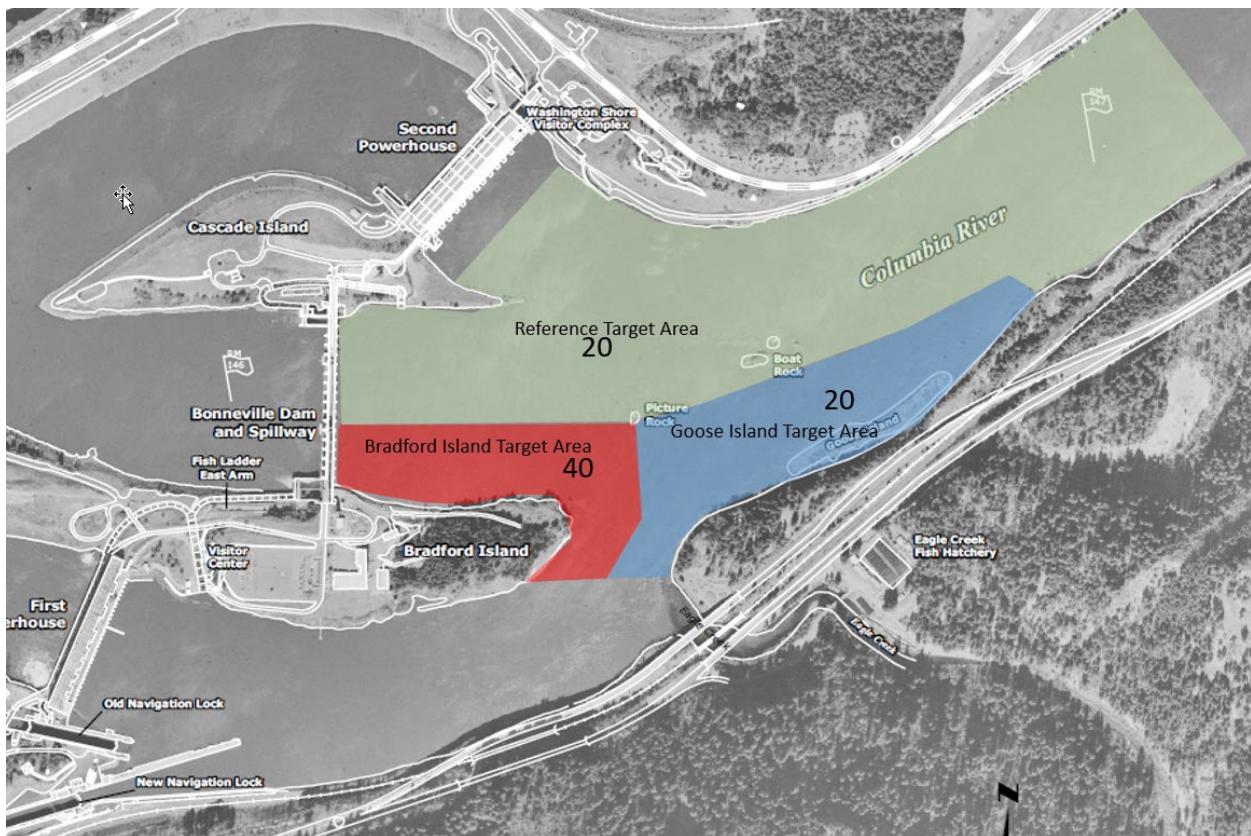


Figure 2. Bass Sampling Target Areas – River OU

USGS staff working on this study have an extensive history of fish sampling experience. Please use the following links to review examples of previous research involving fish sampling:

<https://www.cbfish.org/Document.mvc/Viewer/P129624>

<https://www.cbfish.org/Document.mvc/Viewer/P129628>

<https://pubs.usgs.gov/of/2019/1011/ofr20191011.pdf>

<https://pubs.usgs.gov/of/2019/1097/ofr20191097.pdf>

### *Acoustic telemetry study*

An acoustic telemetry study will be conducted during March and April 2022 to describe movement patterns of smallmouth bass near the forebay of Bonneville Dam. Fish will be tagged in March and April and transmitters will emit signals until late May when their batteries expire. A total of 40 adult smallmouth bass (Table 1) will be collected using angling, surgically tagged with an acoustic transmitter (Model SS4000, Advanced Telemetry Systems, Isanti, MN), released, and monitored for approximately 90 days until the transmitters are expected to expire. Collection for acoustic tagging will occur simultaneously with collection for tissue analysis so collection methods will be identical to those previously described in this document except that we will also record the transmitter identification for each fish that is tagged and released. We will likely use two boats during this period with one boat focusing on collecting fish for tissue analyses and one boat focusing on collecting fish for acoustic tagging. Collection of fish for tissue analysis is the higher priority of the two collection efforts so the second boat will be redirected to collect fish for tissue sampling if necessary. Fish will be selected for tagging to ensure that a range of fish sizes greater than 150mm and generally ranging in size between 150 and 400mm are included in the assessment. Surgical implantation of acoustic transmitters and fish handling and holding will follow methods described in Cooke and Bunt (2001). Fish will be released once they recover from anesthesia, usually within 5 minutes of surgery completion. We are currently conducting a laboratory study at our facility that includes acoustic tagging of a total of 10 adult smallmouth bass and monitoring tag retention and survival for approximately 3 months as a quality assurance/quality control measure for the field study.

A total of 15 acoustic receivers (Model SR5000, Advanced Telemetry Systems, Isanti, MN) will be deployed in the vicinity of Bradford Island and the River OU prior to tagging and will operate continuously throughout the study period. Depending on the location, receivers will be established at designated locations via boat and land access. Receivers will be checked at regular intervals by boat and land. Receivers placed within the BRZ can be checked via land. Most receivers will be concentrated within 2.5 km of the Bonneville Dam forebay to detect fish moving near the dam (Figure 3). Twelve additional receivers (serving as 6 separate ‘gates’) will be deployed both upstream and downstream of the dam to determine if smallmouth bass undertake substantial movements away from Bonneville Dam. Acoustic receivers can reliably detect tagged fish that are located within approximately 100 m of the receiver location, so this array was designed to maximize detection probability (>95%) of tagged fish near Bonneville Dam and is based on a long history of conducting telemetry studies including multiple studies near Bonneville Dam. Receivers will continuously monitor for the presence of tagged fish and will record the date and time of each detection (transmitters will emit a signal every 5 sec). This ping rate was selected to ensure an accurate measure of fish transiting certain zones within the forebay. Sites will be visited one time per week by a USGS employee to check on the operational status of the receiver and to download data until all tags have stopped operating.<sup>1</sup>

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<sup>1</sup>Acoustic telemetry studies are frequently conducted using site visits every 3 weeks, so the approach outlined is more robust.

At the conclusion of the study, telemetry records will be analyzed, and fish movement patterns will be summarized to describe the following:

- (1) Residence time near Bradford Island. Telemetry records will be queried to determine the total amount of time that tagged individuals were detected on receivers located on Bradford Island. This information will be useful for understanding temporal exposure of smallmouth bass to conditions around Bradford Island.
- (2) Movement between Bradford Island and other areas of the Bonneville Dam forebay. Telemetry records will be queried to determine the number of fish that move between receivers located on Bradford Island and other locations in the forebay of Bonneville Dam including the southern shoreline, northern shoreline, Boat Rock, and Cascades Island. This information will be useful for understanding how smallmouth bass move within the forebay of Bonneville Dam and for making inferences about how the near-dam population is exposed to conditions around Bradford Island.
- (3) Movement between the forebay of Bonneville Dam and sites located outside the River OU both upstream and downstream of the dam. Telemetry records will be queried to determine if any fish move upstream from the forebay of Bonneville Dam and are detected on acoustic receivers located near the downstream end of the Reference Area. This information will be useful for understanding if large movements by smallmouth bass occur during late summer and fall.

Telemetry results will be summarized in a USGS Open-file Report Series that is peer-reviewed and publicly available online. USGS staff working on this project have extensive experience in conducting active telemetry studies. Examples of previous telemetry research can be accessed using the following links:

<https://pubs.usgs.gov/of/2014/1069/>

<https://onlinelibrary.wiley.com/doi/full/10.1002/rra.3023>

<https://pubs.usgs.gov/of/2016/1210/ofr20161210.pdf>

#### *Health and safety plan*

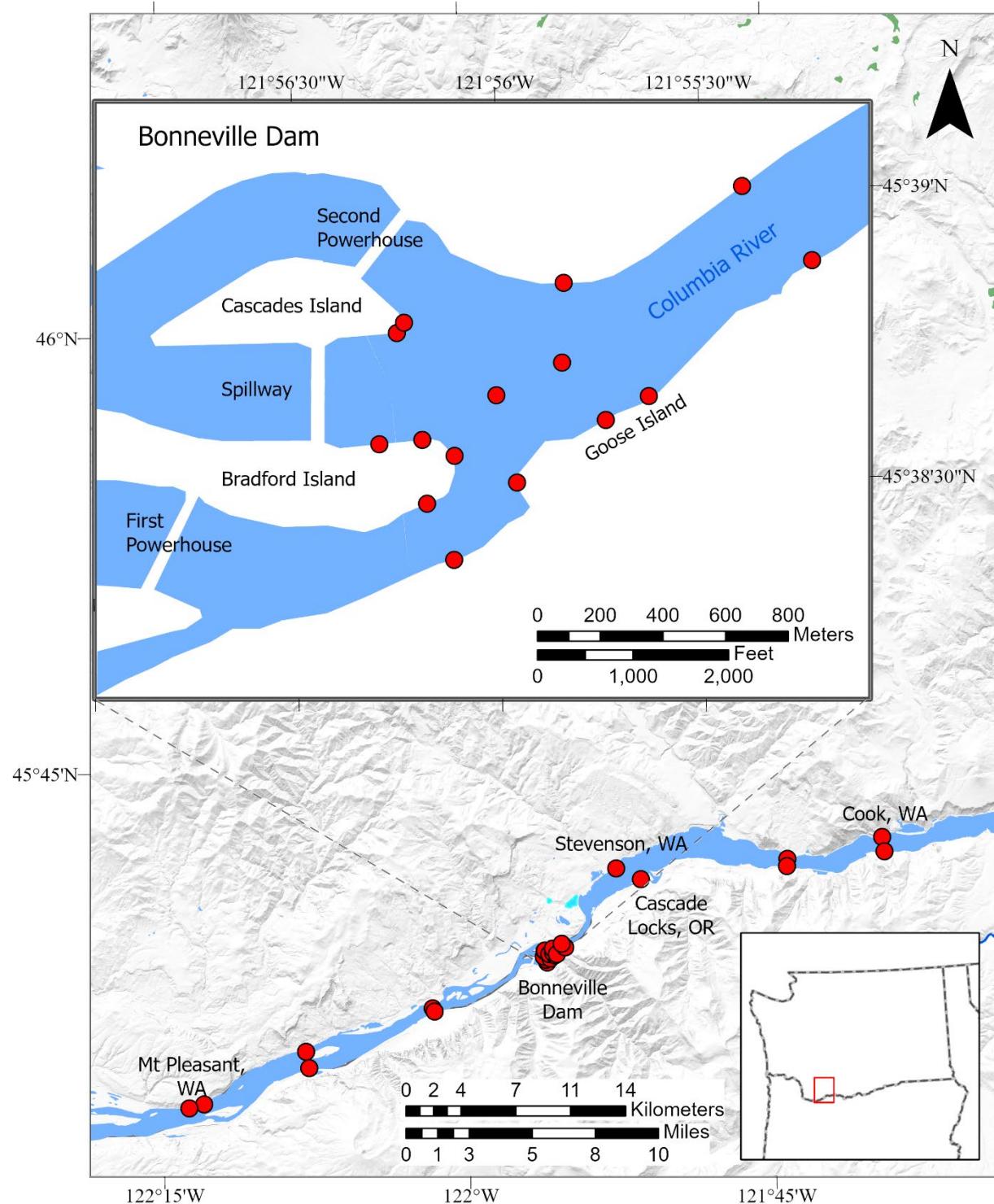
USGS takes workplace safety seriously and has the following Occupational Safety and Health Program Requirements:

<https://www.usgs.gov/about/organization/science-support/survey-manual/445-2-h-occupational-safety-and-health-program>

All USGS employees working on this project have up-to-date certifications for first aid, and are certified motorboat operators through the Motorboat Operator Certification Course. Our employees are currently conducting fieldwork while taking approved precautions for minimizing the likelihood of acquiring or transmitting COVID-19. These precautions include wearing a mask, maintaining adequate social distancing and frequently washing hands. All federal employees within USGS and USACE are required to be vaccinated as a condition of employment. Our precautions have changed frequently as this situation has evolved and we expect it to continue evolving as the study proceeds. The USACE and USGS will communicate frequently to ensure consistency in evolving procedures to protect against the spread of COVID-

19. All field staff will be required to stay home if not feeling well. Backup staff will be available from both USGS and USACE in the event that any staff need to stay home sick.

Additionally, the USACE has specific safety requirements for working at or near the dam. USGS will comply with these requirements, including acquiring a BRZ permit.



## References

- Cooke, S.J., and C.M. Bunt. 2001. Assessment of internal and external antenna configurations of radio transmitters implanted in smallmouth bass. North American Journal of Fisheries Management 21: 236-241.
- EPA. 2000. Guidance for assessing chemical contamination data for use in fish advisories. Volume 1: Fish sampling and analysis, 3<sup>rd</sup> edition. EPA 823-B-00-007. Office of Water, US Environmental Protection Agency, Washington, DC available at <https://www.epa.gov/sites/production/files/2018-11/documents/guidance-assess-chemical-contaminant-vol1-third-edition.pdf>
- URS. 2012. Upland and River Operable Units Remedial Investigation Report. Bradford Island, Bonneville Dam Forebay, Cascade Locks, Oregon. June.
- URS. 2016. Baseline human health and ecological risk assessment, river operable unit. Report to the U.S. Army Corps of Engineers, Portland, Oregon. April 2016. 88 p.
- USACE. 2017. Final feasibility study: Bradford Island upland operable unit, Cascade Locks, Oregon. Report by the U.S. Army Corps of Engineers, Portland, Oregon. August 2017. 136 p.
- Kock, T.J., Hansen, G.S., and Evans, S.D., 2021, Behavior and movement of smallmouth bass (*Micropterus dolomieu*) in the forebay of Bonneville Dam, Columbia River, August–December 2020: U.S. Geological Survey Open-File Report 2021–1099, 13 p., <https://doi.org/10.3133/ofr20211099>.

## Appendix B: Field Forms

Date: \_\_\_\_\_

**USGS CRRL and USACE Project: Bradford Island River OU Bass Sampling**

Sheet \_\_\_\_ of \_\_\_\_

Angling Start (hh:mm): \_\_\_\_\_

Vessel: \_\_\_\_\_

Weather conditions: \_\_\_\_\_

Angling End (hh:mm): \_\_\_\_\_

Crew: \_\_\_\_\_

Record	Collection Type	Collection Area	Time (24hr)	Depth (ft)	Latitude (DD)	Longitude (DD)	Species	TL (mm)	Stomach (Y/N)	Sample_ID	Mass (g)	Comment/Observation
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												

**Collection Type:** Tissue, Tagging **Collection Area:** N Brad, S Brad, E Brad, Cascade, Goose, Boat R, WA Shore**Species:** Smallmouth bass, SB; Crayfish, CF; sculpins, SC; Northern Pikeminnow, NPM; Steelhead, STH;**Mass:** collected at end of day at CRRL**Comment/Observation:** tackle type, abnormalities, photo, ... as applicable

## **Appendix C: Job Hazard Analysis (JHA)**



**U.S. ARMY CORPS OF ENGINEERS, SEATTLE DISTRICT  
ACTIVITY HAZARDS ANALYSIS (AHA)**

For use of this form, see EM 385-1-1 Section 01.A.15; the proponent agency is CENWS-SO

Date Prepared: 20 July 2020

Project/Location: Bonneville Dam, Cascade Locks, Oregon

Activity/Work Task: Bradford Island River OU Bass Sampling

Contract Number: NA

Prepared By (Name & Title): Katie Richwine/ Joseph Marsh CDSO

Reviewed By (Name & Title): Joseph Marsh, Collateral Duty Safety Officer

Overall Risk Assessment Code (RAC)  
(Use highest final RAC)

M

**Risk Assessment Code \* (RAC) Matrix**

Severity	E = Extremely High Risk H = High Risk M = Moderate Risk L = Low Risk	Probability				
		Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M	M
Critical	E	H	H	M	L	L
Marginal	H	M	M	L	L	L
Negligible	M	L	L	L	L	L

**USACE Risk Acceptance Authority** (digital signature):

[For Acceptance of Risk Authority see Table 4-2, DA PAM 385-30, Risk Management]

MARSH.JOSEPH.R.1201777662  Digitally signed by MARSH.JOSEPH.R.1201777662  
Date: 2020.07.19 14:17:09 -07'00'

Add Identified Hazards

	Job Steps	Hazards	Initial RAC *	Actions To Eliminate or Minimize Hazards	Final RAC *
X	1. Overall Project Execution.	Potential COVID19 exposure.	M	<p>Face coverings are mandatory for employees, inside (unless working alone) and outside, when 6ft distancing from other individuals cannot be maintained.</p> <p>Face covers must be worn in meeting type situations - regardless of separation. Social distance of 6-ft or greater must be maintained and no more than 10-people gathered together.</p> <p>Face coverings are required to be worn at all time when traveling or operating a vehicle, vessel or equipment with more than one occupant/operator.</p> <p>Disinfectant wipes (or similar) used prior to and after each use of a shared piece of equipment.</p>	L



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Job Steps	Hazards	Initial RAC *	Actions To Eliminate or Minimize Hazards	Final RAC *
X 2. GOV / POV Vehicle Usage - Based on round trip. Prior to usage, en transit and stoppages, and return of vehicle.  Note: Cleaning supplies can be obtained from the District Headquarters POC: Chris Garcia 206-764-3663(office) (b)(6) (cell)	Exposure to potential COVID19 droplets on vehicle surface  Exposure to individuals with potential to have COVID19  Exposure to surface with potential COVID19 droplets outside of vehicle.	M	Wipe down inside of vehicle with CDC/EPA approved disinfectant before use and after usage.  Wear PPE specified by manufacturer of disinfectant. This could include Nitrile gloves, eye protection, etc.  Wash or sanitize hands after disinfecting vehicle  To maintain social distancing of 6 feet, limit capacity to 1 person per vehicle. If unable to accommodate 1 person per vehicle, have the driver and passenger in the opposite rear passenger seat.  Maintain social distancing of 6 feet for interactions outside of vehicle.  Utilizing drive through, self-checkouts at grocery stores, and pay at the pump stations for fuel to minimize social contact with individuals.  Research sites before travel to determine breaks in route with adequate hand washing facilities.  Wash hands frequently while outside of vehicle. Refrain from shaking hands and avoid contact with sick individuals.  Reduce need to minimize stops by bringing food and water from home.  Wash hands or sanitize before re-entering the vehicle.  If possible, do not hand over identification for someone else to touch. If handing over is required, and disinfect id card and hands after ID card is returned.  Minimize social contact by lowering the window the minimal amount necessary.	M



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Job Steps	Hazards	Initial RAC *	Actions To Eliminate or Minimize Hazards		Final RAC *
X	Exposure to other individuals in vehicle	M	To maintain social distancing of 6 feet, limit capacity to 1 person per vehicle. If unable to accommodate 1 person per vehicle, have the driver and passenger in the opposite rear passenger seat.	L	
X	3. Prepare sampling equipment; sampling site access and setup.	M	Wear leather work gloves when handling tools or materials that may be sharp or have sharp edges. Be familiar with the proper use and limitations of hand tools. Maintain steady pace and follow rest periods given on job. Select a position during hand clearing to minimize following stressors: chronic muscle contraction or steady force; extreme or awkward positions; repetitive forceful motions; or excessive gripping, pinching, or pressing. Do not twist and turn while lifting. Keep the load centered and close to body. Report even minor injuries to site supervisor for evaluation. <ul style="list-style-type: none"><li>• Have a first aid kit available and have a minimum of 2 persons with first aid and CPR training on-site. Walk carefully.</li><li>Wear clothing appropriate for the weather, including a hat. Wear sunscreen as needed. Pay attention to river stage, sequence sampling activities to avoid inundation. Wear appropriate PPE.</li><li>No eating, drinking, etc. while collecting samples. Always use buddy system. Wear safety toe boots during fieldwork in accordance with ASTM F2413-18.</li><li>All personnel must wear PFD while working on a boat or within 6 feet from shoreline.</li></ul>	L	



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	<b>Job Steps</b>	<b>Hazards</b>	<b>Initial RAC *</b>	<b>Actions To Eliminate or Minimize Hazards</b>	<b>Final RAC *</b>
X	3. Collection of bass samples: assisting the USGS team from a boat platform and/or the shoreline.	Cold water contact, drowning, slips, trips, and falls; back strain - muscle strain; heat stress, sunburn, cold stress, precipitation, biological hazards, lightning - visibility.	L	Remain alert for work site hazards. 3 points of contact when moving around boat. BRZ permit, coordination with dam control room, and current HECP training when entering forebay. Use buddy system - no personnel permitted to work alone. Use sampling tools designed to minimize back/muscle strain during work. Wear clothing appropriate for the weather and work tasks (Level D). Wear sunscreen as needed. Wear appropriate PPE to include Nitrile gloves, steel toed boots, and eye protection. No eating, drinking, etc. while collecting samples. Inspect work sites for biological hazards before starting work. Only perform work during daylight hours. Follow Site Specific H&S Plan for Bonneville Dam. In event of emergency, call radio control room (do not call 911).	L
X	3a. Collection of bass samples continued... Decontamination of equipment and PPE.	Slips, trips, and falls.	M	Use buddy system. Give self enough time to decontaminate PPE and equipment. Consider using disposable PPE or equipment for difficult to decontaminate items. Wear appropriate PPE and use good technique when removing PPE. Properly dispose of used/soiled waste materials.	L
X	3b. Collection of bass samples continued...	Heat Stress.	M	5e. When hot/humid conditions are forecast for the project site, the site safety and health officer (SSHO) shall: brief signs, symptoms and first aid procedures for heat stress. Schedule work earlier or later in the day. Use work/rest schedules. Limit strenuous work (e.g., carrying heavy loads). Use relief workers when needed. Use buddy system to monitor team member symptoms. Field workers shall ensure sufficient drinking water is available at all times.	L



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	<b>Job Steps</b>	<b>Hazards</b>	<b>Initial RAC *</b>	<b>Actions To Eliminate or Minimize Hazards</b>	<b>Final RAC *</b>
X	3c. Collection of bass samples continued...	Cold Stress/hypothermia.	M	5f. In the event of forecast cold weather or wind chill warnings, the SSHO shall brief cold stress symptoms, monitoring, and first aid procedures. Use buddy system to monitor team member symptoms. Team leader shall ensure personnel wear appropriate PPE for cold weather, and establish warming breaks in heated vehicles or buildings as appropriate.	L
X	3d. Collection of bass samples continued...	Severe weather: Storms and lightning.	M	5g. If lightning is observed during fieldwork, and thunder is heard within 30 seconds, cease operations immediately and seek shelter. Work may resume 30 minutes after the last observed lightning strike. Personnel should monitor weather regularly by vehicle radio, or smartphone weather apps. Work will cease in the event of severe rainstorms, reported tornadoes in area, snowstorms, hail, and high winds.	L



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Job Steps	Hazards	Initial RAC *	Actions To Eliminate or Minimize Hazards	Final RAC *
X 4. Boat Operations - sampling from boat - small vessel 26 feet or under.	Drowning, falling overboard, inclement weather, pinches, cuts, laceration, COVID-19 Exposure.	M	IAW Section 1 and 2 above: Cloth face coverings must be worn by all personnel on boat at all times. Sanitize hands and don required PPE listed in Equipment before boarding. Personnel shall sanitize all touch areas in spaces entered before departure. Maintain maximum amount of space possible between personnel. Avoid touching face. Operator must have valid motor boat operators permit. Do not exceed passenger or cargo limit on vessel. Make and use safety checklist. Operator to brief boat operations safety to all passengers before getting under way. Ensure approved PFD's are available and worn by all personnel on boat. Personnel should remain seated while boat is under way. Standing during work is approved if hand rails or structures are available to help prevent falls. Do not lean over side of boat. Use buddy system - personnel should not work alone. Ensure all safety devices first aid kits, fire extinguishers, etc.) are on board and in serviceable condition. Make sure audible signaling device is on board and serviceable (whistle or horn).	L
X 5. General	Fire and Emergencies.	M	First Aid Kits and fire extinguishers shall be loaded into field vehicle before departing for the project site. At least two fully charged cell phones will be available with field team at all times in case of fire or medical emergency (Call 911). SSHO will brief directions to hospital before work begins. At least one person with current First Aid/CPR training shall be present on site during the work. If possible, do not park vehicles on tall, dry grass. Only fight very small fires with fire extinguishers. Otherwise, for larger fires, safely depart site and call 911.	L



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Equipment	Training	Inspection
Add Items		

Equipment	Training	Inspection
X Hand sanitizer if hand washing facilities are not available	NA	NA
X CDC/EPA-approved Disinfectant	NA	NA
X PPE recommended by manufacturer of specific CDC/EPA-approved disinfectant used	Varies depending on PPE	Varies depending on PPE.
X Ensure that you are wearing the proper PPE - PFD's, Hard Hat, Steel Toed Boots, Safety Vest, Safety Glasses and Gloves. Be sure to check with site POC to verify PPE requirements.	Varies depending on PPE	Varies depending on PPE
X Motor Vehicle	Defensive Drivers Certificate/boat operators license.	Daily
X Check for READY condition of vehicles, cell phone batteries, first aid kits, fire extinguisher, eye wash bottles, PPE, sampling equipment, drinking water, decontamination water, sanitation and hand wash facilities.	Current HAZWOPER training/refresher for all field employees, at least one person trained and current in First Aid/CPR, site specific training, equipment and procedures training, daily tailgate safety briefings.	Daily vehicle inspection. Continuous site observation for identified hazards. Daily inspection of PPE, sampling equipment (pump equipment and air lines), and tools.

Add Name
----------

Involved Personnel (Initial & Date Beside Name)
X
X
X
X

Add Competent Person
----------------------

Competent Person	Area of Competency
X	
X	
X	

## Appendix D: PCB Congeners with Detection Limits and Reporting Limits

Analyte Description	CAS Number	RL	MDL	LOD	Units
DCB Decachlorobiphenyl	2051-24-3	24.0	3.22	12.0	ng/Kg
PCB-1	2051-60-7	8.00	2.39	5.00	ng/Kg
PCB-10	33146-45-1	8.00	1.52	4.00	ng/Kg
PCB-103	60145-21-3	16.0	2.74	8.00	ng/Kg
PCB-104	56558-16-8	16.0	2.00	8.00	ng/Kg
PCB-104L	234432-89-4	50.0	23.0		ng/Kg
PCB-105	32598-14-4	16.0	2.00	8.00	ng/Kg
PCB-105L	208263-62-1	20.0	11.0		ng/Kg
PCB-106	70424-69-0	16.0	2.00	8.00	ng/Kg
PCB-107	70424-68-9	16.0	2.00	8.00	ng/Kg
PCB-108/124	STL02294	32.0	4.00	16.0	ng/Kg
PCB-11	2050-67-1	30.0	12.9	26.0	ng/Kg
PCB-110/115	STL01826	32.0	4.00	16.0	ng/Kg
PCB-111	39635-32-0	16.0	2.00	8.00	ng/Kg
PCB-112	74472-36-9	16.0	2.00	8.00	ng/Kg
PCB-114	74472-37-0	16.0	2.00	8.00	ng/Kg
PCB-114L	208263-63-2	50.0	12.0		ng/Kg
PCB-118	31508-00-6	16.0	2.00	8.00	ng/Kg
PCB-118L	104130-40-7	50.0	19.0		ng/Kg
PCB-12/13	STL01797	16.0	4.52	10.0	ng/Kg
PCB-120	68194-12-7	16.0	2.00	8.00	ng/Kg
PCB-121	56558-18-0	16.0	2.40	8.00	ng/Kg
PCB-122	76842-07-4	16.0	2.35	8.00	ng/Kg
PCB-123	65510-44-3	16.0	2.00	8.00	ng/Kg
PCB-123L	208263-64-3	50.0	15.0		ng/Kg
PCB-126	57465-28-8	16.0	2.00	8.00	ng/Kg
PCB-126L	208263-65-4	50.0	14.0		ng/Kg
PCB-127	39635-33-1	16.0	2.00	8.00	ng/Kg
PCB-127L	STL02202	100	28.0		ng/Kg
PCB-128/166	STL01816	32.0	4.00	16.0	ng/Kg
PCB-128L	STL02694	1.00	1.00		ng/Kg
PCB-129/138/163	STL01817	48.0	6.00	24.0	ng/Kg
PCB-130	52663-66-8	16.0	2.00	8.00	ng/Kg
PCB-131	61798-70-7	16.0	2.00	8.00	ng/Kg
PCB-132	38380-05-1	16.0	2.00	8.00	ng/Kg
PCB-133	35694-04-3	16.0	2.00	8.00	ng/Kg
PCB-133L	STL02695	50.0	17.0		ng/Kg
PCB-134	52704-70-8	16.0	2.00	8.00	ng/Kg
PCB-135/151	STL01819	32.0	9.07	20.0	ng/Kg
PCB-136	38411-22-2	16.0	4.51	10.0	ng/Kg
PCB-137	35694-06-5	16.0	2.00	8.00	ng/Kg
PCB-139/140	STL01820	32.0	4.00	16.0	ng/Kg
PCB-14	34883-41-5	8.00	1.16	4.00	ng/Kg
PCB-141	52712-04-6	16.0	2.00	8.00	ng/Kg
PCB-141L	STL02696	20.0	9.00		ng/Kg
PCB-142	41411-61-4	16.0	2.00	8.00	ng/Kg
PCB-143	68194-15-0	16.0	2.00	8.00	ng/Kg
PCB-144	68194-14-9	16.0	3.63	8.00	ng/Kg
PCB-145	74472-40-5	16.0	4.23	9.00	ng/Kg
PCB-146	51908-16-8	16.0	2.00	8.00	ng/Kg
PCB-147/149	STL01821	32.0	4.00	16.0	ng/Kg
PCB-148	74472-41-6	16.0	2.72	8.00	ng/Kg
PCB-15	2050-68-2	8.00	1.84	4.00	ng/Kg

PCB-150	68194-08-1	16.0	4.47	9.00	ng/Kg
PCB-152	68194-09-2	16.0	4.35	9.00	ng/Kg
PCB-153/168	STL01822	32.0	4.00	16.0	ng/Kg
PCB-154	60145-22-4	16.0	2.25	8.00	ng/Kg
PCB-155	33979-03-2	16.0	2.00	8.00	ng/Kg
PCB-155L	234432-90-7	100	34.0		ng/Kg
PCB-156/157	STL01792	32.0	5.00	16.0	ng/Kg
PCB-156L/157L	STL01793	50.0	13.0		ng/Kg
PCB-158	74472-42-7	16.0	2.00	8.00	ng/Kg
PCB-159	39635-35-3	16.0	2.00	8.00	ng/Kg
PCB-15L	208263-67-6	50.0	18.0		ng/Kg
PCB-16	38444-78-9	8.00	2.35	5.00	ng/Kg
PCB-160	41411-62-5	16.0	2.00	8.00	ng/Kg
PCB-161	74472-43-8	16.0	2.00	8.00	ng/Kg
PCB-162	39635-34-2	16.0	2.00	8.00	ng/Kg
PCB-162L	STL02697	100	35.0		ng/Kg
PCB-164	74472-45-0	16.0	2.00	8.00	ng/Kg
PCB-165	74472-46-1	16.0	2.00	8.00	ng/Kg
PCB-167	52663-72-6	16.0	2.00	8.00	ng/Kg
PCB-167L	208263-69-8	50.0	11.0		ng/Kg
PCB-169	32774-16-6	16.0	2.00	8.00	ng/Kg
PCB-169L	208263-70-1	50.0	16.0		ng/Kg
PCB-17	37680-66-3	8.00	1.97	4.00	ng/Kg
PCB-170	35065-30-6	16.0	2.00	8.00	ng/Kg
PCB-171/173	STL01823	32.0	4.00	16.0	ng/Kg
PCB-172	52663-74-8	16.0	2.00	8.00	ng/Kg
PCB-174	38411-25-5	16.0	2.00	8.00	ng/Kg
PCB-175	40186-70-7	16.0	2.00	8.00	ng/Kg
PCB-176	52663-65-7	16.0	2.00	8.00	ng/Kg
PCB-177	52663-70-4	16.0	2.00	8.00	ng/Kg
PCB-178	52663-67-9	16.0	2.00	8.00	ng/Kg
PCB-179	52663-64-6	16.0	2.00	8.00	ng/Kg
PCB-18/30	STL01798	32.0	2.79	8.00	ng/Kg
PCB-180/193	STL01824	16.0	4.00	16.0	ng/Kg
PCB-180L	160901-82-6	1.00	1.00		ng/Kg
PCB-181	74472-47-2	16.0	2.00	8.00	ng/Kg
PCB-182	60145-23-5	32.0	2.00	8.00	ng/Kg
PCB-183/185	STL02297	16.0	4.00	16.0	ng/Kg
PCB-184	74472-48-3	16.0	2.00	8.00	ng/Kg
PCB-186	74472-49-4	16.0	2.00	8.00	ng/Kg
PCB-187	52663-68-0	16.0	3.07	8.00	ng/Kg
PCB-188	74487-85-7	16.0	2.00	8.00	ng/Kg
PCB-188L	234432-91-8	50.0	23.0		ng/Kg
PCB-189	39635-31-9	16.0	2.00	8.00	ng/Kg
PCB-189L	208263-73-4	50.0	18.0		ng/Kg
PCB-19	38444-73-4	8.00	1.17	4.00	ng/Kg
PCB-190	41411-64-7	16.0	2.00	8.00	ng/Kg
PCB-191	74472-50-7	16.0	2.21	8.00	ng/Kg
PCB-192	74472-51-8	16.0	2.17	8.00	ng/Kg
PCB-194	35694-08-7	24.0	3.00	12.0	ng/Kg
PCB-195	52663-78-2	24.0	3.00	12.0	ng/Kg
PCB-196	42740-50-1	24.0	3.00	12.0	ng/Kg
PCB-197/200	STL02692	48.0	6.00	24.0	ng/Kg
PCB-198/199	STL01825	48.0	6.00	24.0	ng/Kg

PCB-19L	234432-87-2	10.0	4.00		ng/Kg
PCB-1L	234432-85-0	20.0	8.00		ng/Kg
PCB-2	2051-61-8	8.00	2.03	5.00	ng/Kg
PCB-20/28	STL01799	16.0	2.00	8.00	ng/Kg
PCB-201	40186-71-8	24.0	3.00	12.0	ng/Kg
PCB-202	2136-99-4	24.0	3.00	12.0	ng/Kg
PCB-202L	105600-26-8	100	44.0		ng/Kg
PCB-203	52663-76-0	24.0	3.00	12.0	ng/Kg
PCB-204	74472-52-9	24.0	3.00	12.0	ng/Kg
PCB-205	74472-53-0	24.0	3.00	12.0	ng/Kg
PCB-205L	234446-64-1	100	45.0		ng/Kg
PCB-206	40186-72-9	24.0	3.00	12.0	ng/Kg
PCB-206L	208263-75-6	100	45.0		ng/Kg
PCB-207	52663-79-3	24.0	3.00	12.0	ng/Kg
PCB-208	52663-77-1	24.0	3.00	12.0	ng/Kg
PCB-208L	234432-92-9	100	46.0		ng/Kg
PCB-209L	105600-27-9	50.0	15.0		ng/Kg
PCB-21/33	STL01800	16.0	2.05	8.00	ng/Kg
PCB-22	38444-85-8	8.00	1.36	4.00	ng/Kg
PCB-23	55720-44-0	8.00	1.34	4.00	ng/Kg
PCB-24	55702-45-9	8.00	1.09	4.00	ng/Kg
PCB-25	55712-37-3	16.0	1.00	4.00	ng/Kg
PCB-26/29	STL01801	8.00	2.00	8.00	ng/Kg
PCB-27	38444-76-7	8.00	1.55	4.00	ng/Kg
PCB-3	2051-62-9	8.00	2.53	5.50	ng/Kg
PCB-31	16606-02-3	8.00	1.42	4.00	ng/Kg
PCB-31L	STL01601	50.0	15.0		ng/Kg
PCB-32	38444-77-8	8.00	1.34	4.00	ng/Kg
PCB-32L	STL01602	20.0	8.00		ng/Kg
PCB-34	37680-68-5	8.00	1.00	4.00	ng/Kg
PCB-35	37680-69-6	8.00	3.17	6.50	ng/Kg
PCB-36	38444-87-0	8.00	1.37	4.00	ng/Kg
PCB-37	38444-90-5	8.00	1.00	4.00	ng/Kg
PCB-37L	208263-79-0	50.0	13.0		ng/Kg
PCB-38	53555-66-1	8.00	1.64	4.00	ng/Kg
PCB-39	38444-88-1	8.00	1.73	4.00	ng/Kg
PCB-3L	208263-77-8	20.0	9.00		ng/Kg
PCB-4	13029-08-8	8.00	2.09	5.00	ng/Kg
PCB-40/71	STL01802	32.0	4.00	16.0	ng/Kg
PCB-41	52663-59-9	16.0	2.00	8.00	ng/Kg
PCB-42	36559-22-5	16.0	2.00	8.00	ng/Kg
PCB-43	70362-46-8	16.0	2.50	8.00	ng/Kg
PCB-44/47/65	STL01803	48.0	6.00	24.0	ng/Kg
PCB-45	70362-45-7	16.0	2.90	8.00	ng/Kg
PCB-46	41464-47-5	16.0	2.93	8.00	ng/Kg
PCB-47L	STL02698	1.00	1.00		ng/Kg
PCB-48	70362-47-9	16.0	2.33	8.00	ng/Kg
PCB-49/69	STL01805	32.0	4.00	16.0	ng/Kg
PCB-4L	234432-86-1	50.0	17.0		ng/Kg
PCB-5	16605-91-7	8.00	1.93	4.00	ng/Kg
PCB-50/53	STL01806	32.0	6.17	16.0	ng/Kg
PCB-51	68194-04-7	16.0	3.04	8.00	ng/Kg
PCB-52	35693-99-3	16.0	2.18	8.00	ng/Kg
PCB-54	15968-05-5	16.0	3.11	8.00	ng/Kg

PCB-54L	234432-88-3	50.0	12.0		ng/Kg
PCB-55	74338-24-2	16.0	2.05	8.00	ng/Kg
PCB-56	41464-43-1	16.0	2.00	8.00	ng/Kg
PCB-57	70424-67-8	16.0	2.00	8.00	ng/Kg
PCB-58	41464-49-7	16.0	2.00	8.00	ng/Kg
PCB-59/62/75	STL01807	48.0	6.00	24.0	ng/Kg
PCB-6	25569-80-6	8.00	1.86	4.00	ng/Kg
PCB-60	33025-41-1	16.0	2.00	8.00	ng/Kg
PCB-60L	STL02699	50.0	13.0		ng/Kg
PCB-61/70/74/76	STL01808	64.0	8.00	32.0	ng/Kg
PCB-63	74472-34-7	16.0	2.00	8.00	ng/Kg
PCB-64	52663-58-8	16.0	2.00	8.00	ng/Kg
PCB-66	32598-10-0	16.0	2.00	8.00	ng/Kg
PCB-67	73575-53-8	16.0	2.00	8.00	ng/Kg
PCB-68	73575-52-7	16.0	2.00	8.00	ng/Kg
PCB-7	33284-50-3	8.00	1.55	4.00	ng/Kg
PCB-70L	STL02700	1.00	1.00		ng/Kg
PCB-72	41464-42-0	16.0	2.00	8.00	ng/Kg
PCB-73	74338-23-1	16.0	2.69	8.00	ng/Kg
PCB-77	32598-13-3	16.0	2.00	8.00	ng/Kg
PCB-77L	105600-23-5	50.0	17.0		ng/Kg
PCB-78	70362-49-1	16.0	3.34	8.00	ng/Kg
PCB-79	41464-48-6	16.0	2.29	8.00	ng/Kg
PCB-8	34883-43-7	8.00	2.56	5.50	ng/Kg
PCB-80	33284-52-5	16.0	2.53	8.00	ng/Kg
PCB-81	70362-50-4	16.0	2.00	8.00	ng/Kg
PCB-81L	208461-24-9	50.0	18.0		ng/Kg
PCB-82	52663-62-4	16.0	2.00	8.00	ng/Kg
PCB-83	60145-20-2	16.0	2.00	8.00	ng/Kg
PCB-84	52663-60-2	16.0	2.00	8.00	ng/Kg
PCB-85/116/117	STL01810	48.0	6.00	24.0	ng/Kg
PCB-85L	STL02701	1.00	1.00		ng/Kg
PCB-86/87/97/109/119/125	STL02295	96.0	12.0	48.0	ng/Kg
PCB-88	55215-17-3	16.0	2.36	8.00	ng/Kg
PCB-89	73575-57-2	16.0	2.00	8.00	ng/Kg
PCB-8L	STL01600	50.0	12.0		ng/Kg
PCB-9	34883-39-1	8.00	2.22	5.00	ng/Kg
PCB-90/101/113	STL01813	48.0	6.26	24.0	ng/Kg
PCB-91	68194-05-8	16.0	2.55	8.00	ng/Kg
PCB-92	52663-61-3	16.0	2.00	8.00	ng/Kg
PCB-93/100	STL01814	32.0	4.55	16.0	ng/Kg
PCB-94	73575-55-0	16.0	2.55	8.00	ng/Kg
PCB-95	38379-99-6	16.0	2.00	8.00	ng/Kg
PCB-95L	STL01604	50.0	22.0		ng/Kg
PCB-96	73575-54-9	16.0	4.25	8.00	ng/Kg
PCB-98/102	STL01843	32.0	4.42	16.0	ng/Kg
PCB-99	38380-01-7	16.0	2.65	8.00	ng/Kg
Polychlorinated biphenyls, Total	1336-36-3	8.00	1.16	4.00	ng/Kg
Total Dichlorobiphenyls	25512-42-9	8.00	1.16	4.00	ng/Kg
Total Heptachlorobiphenyls	28655-71-2	16.0	2.00	8.00	ng/Kg
Total Hexachlorobiphenyls	26601-64-9	16.0	2.00	8.00	ng/Kg
Total Monochlorobiphenyls	27323-18-8	8.00	2.03	4.00	ng/Kg
Total Nonachlorobiphenyls	53742-07-7	24.0	3.00	12.0	ng/Kg

Total Octachlorobiphenyls	55722-26-4	24.0	3.00	12.0	ng/Kg
Total Pentachlorobiphenyls	25429-29-2	16.0	2.00	8.00	ng/Kg
Total Tetrachlorobiphenyls	26914-33-0	16.0	2.00	8.00	ng/Kg
Total Trichlorobiphenyls	25323-68-6	8.00	1.00	4.00	ng/Kg

## Appendix E: Dry ice sample packing and shipping

## **Instructions - How to Pack Sample Coolers for Shipment with Wet or Dry Ice**

### **At the sampling location:**

1. Samples should be iced as soon as they are sampled. Place the collected samples in a cooler with ice. Samples may be prepared for shipping at the sample location, or later at a convenient location, as long as samples are iced throughout.

### **When using wet ice – How to prepare the samples and cooler for shipment:**

1. So that leaks will not escape the cooler, seal the cooler drain with tape on the inside of the cooler, if it is not already sealed.
2. Line the bottom and sides of the cooler with thick bubble wrap.
3. Place a large, heavy-duty trash bag inside the cooler. All samples and ice will go inside this trash bag.
4. Double-bag ice inside gallon-sized Ziploc bags. Each cooler should have 4 to 5 bags of ice. Ice from water is preferred to gel packs because the gel packs are very hard when frozen and may break bottles, and also due to chemical contamination concerns with some sample types. If the ice was used earlier in the day during sampling, it is good practice to top off the ice bags with additional ice, pouring out any water, to ensure the samples stay cold during shipping.
5. Place all sample bottles in individual Ziploc bags. Place the bagged samples inside bubblewrap sleeves, or wrap with bubblewrap and secure with rubber bands or tape.
6. Put the bagged, bubble-wrapped samples and the double-bagged ice inside the trash bag in the cooler. Each sample should be in contact with ice. A common way to arrange the contents is to lay 2 bags of ice on the bottom of the cooler, put the samples on top of the ice, and then put additional bags of ice on top of the samples, and also vertically between the bottles. Arrangement may vary so that all samples will fit in the cooler.
7. Place an additional piece of bubblewrap on top of the samples.
8. Gather the ends of the trash bag together, fold over several times, and seal with tape. All samples and ice will be sealed in the trash bag, so any leaks should not escape the cooler.
9. If there is too much extra space, stuff bubblewrap around the trash bag to limit motion inside the cooler.

### **When using dry ice – How to prepare the samples and cooler for shipment:**

1. Acquire the appropriate training prior to field event.
  - a. If shipping by **ground**, the personnel packaging and shipping a package (e.g. cooler) containing dry ice do not have to have additional training.
  - b. If shipping by **air**, personnel who package, mark, label, load, document, or sign shipping papers for shipments containing dry ice must have training that satisfies hazmat training requirements in 49 CFR (Part 172), the IATA DGR, and the IMDG Code.
    - i. The Safety Unlimited training course DOT Hazmat: Carrier Requirements – Air/IATA provides training to meet this requirement (<https://www.safetyunlimited.com/online-courses/DOT-Modal-Specific-Air.asp>)
2. Unless otherwise specified by the lab, use 5lbs of dry ice when shipping bottles of groundwater samples, or 10lbs of dry ice when shipping biological samples.

- a. Dry ice will sublime from a solid to gas at a rate of 5-10 pounds (2.27 – 4.54 kg) per 24 hours when shipped in an appropriate insulated cooler.
- 3. Use paper bags or specific dry ice plastic bags (must be vented) to contain the dry ice. Dry ice pellets work better for distribution. Fill a bag with half of the dry ice and put it on the bottom of the cooler.
- 4. Put bubblewrap or other insulating material on top of the dry ice bag.
- 5. Put samples on top of the bubble wrap.
- 6. Put another layer of bubble wrap or other insulating material on top of the samples.
- 7. Fill another bag with the other half of the dry ice and put it on top of the top layer of bubblewrap.
- 8. Use additional insulating material to fill the cooler as much as possible.
- 9. Do not put everything in a trash bag and tie it off. The dry ice needs to vent to avoid the buildup of pressure as it sublimates.

**At the shipping location, with either ice type (for example, FedEx store):**

1. Sign off the chain of custody (COC) with the date and time you are relinquishing the samples to the shipping company. Include the airbill number/tracking number on the COC. It is good practice to take a picture of the COC and email it to the laboratory, along with the tracking number.
2. Place the signed COC in a Ziploc bag and tape it to the inside of the cooler lid.
3. Shut the cooler. Seal the cooler by wrapping filament tape around the cooler. Wrap the filament tape around the cooler on the right and left sides, with two layers of tape on each wrapping.
4. Cut two ~8-10 inch pieces of custody tape. Use the pieces of custody tape to seal the cooler lid to the cooler body, placing the pieces of tape at the front right and back left of the cooler.
5. Fill out the airbill, then keep the top copy of the airbill and return it to the Visa card holder who provided the shipping company account number. Scan a copy and email, if needed.
6. Attach the rest of the airbill to the cooler handle, or tape to the top lid of the cooler.
7. If shipping biological specimens (and assuming they are non-infectious), put a label on the cooler that says “exempt animal specimen.” This label can simply be a piece of paper taped to the cooler. Put on the same side as any other labels.

**Additional shipping steps if shipping with dry ice:**

1. Confirm that the carrier location accepting dry ice shipments; many don't. Often airport locations do.
2. Make sure to not tape around the seal between the lid and cooler body, to allow venting. Additionally, make sure the cooler spout remains open to allow venting.
3. The FedEx label needs to specify the amount of dry ice in the cooler at time of shipment, in kg (4.55 kg for 10 lb).
4. Put a Class 9 Dry Ice diamond placard label on the cooler.
5. Note - While dry ice is considered a dangerous good when shipped by air, a Dangerous Goods Shippers Declaration is not required (assuming there are no other types of dangerous goods in the shipment).
6. If shipping via UPS, they require an additional UPS Dry Ice label. Shipments of dry ice and other dangerous goods without an approved contract with UPS are prohibited. Shipper must establish contracted services with UPS in order to ship dangerous goods.

## **Appendix F: Laboratory Accreditation and Measurement Performance Criteria**



## SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

EUROFINS LANCASTER LABORATORIES ENVIRONMENT TESTING LLC  
2425 New Holland Pike  
Lancaster, PA 17601  
Dorothy M. Love Phone: 717-556-7327

### ENVIRONMENTAL

Valid To: November 30, 2022

Certificate Number: 0001.01

In recognition of the successful completion of the A2LA evaluation process (including an assessment of the laboratory's compliance with the 2009 TNI Environmental Testing Laboratory Standard, and the requirements of the DoD Environmental Laboratory Accreditation Program (DoD ELAP) as detailed in version 5.3 of the DoD/DOE Quality Systems Manual for Environmental Laboratories, accreditation is granted to this laboratory to perform recognized EPA methods using the following testing technologies and in the analyte categories identified below:

#### Testing Technologies

Atomic Absorption/ICP-AES Spectrometry, ICP-MS Spectrometry, Gas Chromatography, Gas Chromatography/Mass Spectrometry, Gravimetry, High Performance Liquid Chromatography, Ion Chromatography, Misc.-Electronic Probes (pH, F, O<sub>2</sub>), Oxygen Demand, Spectrophotometry (Visible), Spectrophotometry (Automated), Titrimetry, TCLP, Total Organic Carbon, Turbidity, Liquid Chromatography/Mass Spectrometry/Mass Spectrometry, High Resolution Gas Chromatography/Mass Spectrometry

Parameter/Analyte	Drinking Water	Non-Potable Water	Solid Hazardous Waste	
			Aqueous	Solid
<b>Demands</b>				
COD	-----	EPA 410.4	-----	-----
Total Organic Carbon	-----	EPA 9060A SM 5310C-2011	EPA 9060A SM 5310C-2011	EPA 9060A SM 5310 B-2011
<b>Anions</b>				
Ammonia	-----	EPA 350.1	EPA 350.1	SM 4500-NH3 B/C-2011
Fluoride	-----	EPA 300.0 EPA 9056A	EPA 9056A	EPA 9056A EPA 300.0
Nitrate (as N)	-----	EPA 300.0 EPA 9056A	EPA 9056A	EPA 9056A EPA 300.0
Nitrite (as N)	-----	EPA 300.0 EPA 9056A	EPA 9056A	EPA 9056A EPA 300.0

<u>Parameter/Analyte</u>	<u>Drinking Water</u>	<u>Non-Potable Water</u>	<u>Solid Hazardous Waste</u>	
			<u>Aqueous</u>	<u>Solid</u>
Bromide	-----	EPA 300.0 EPA 9056A	EPA 9056A	EPA 9056A EPA 300.0
Chloride	-----	EPA 300.0 EPA 9056A	EPA 9056A	EPA 9056A EPA 300.0
Sulfate	-----	EPA 300.0 EPA 9056A	EPA 9056A	EPA 9056A EPA 300.0
<b>Wet Chemistry</b>				
Alkalinity	-----	SM 2320B-2011	-----	-----
Corrosivity	-----	-----	SW-846 Chapter 7	SW-846 Chapter 7
Cyanide	-----	EPA 9012B	EPA 9012B	EPA 9012B
Filterable Residue (TDS)	-----	SM 2540C-2011	-----	-----
Flashpoint	-----	-----	EPA1010A	EPA 1010A
Grain Size	-----	-----	-----	ASTM D422 MOD
Hexavalent Chromium Digestion	-----	-----	-----	EPA 3060A
Hexavalent Chromium	-----	EPA 7196A EPA 7199	EPA 7196A EPA 7199	EPA 7196A EPA 7199
Ignitability	-----	-----	40 CFR 261.21	40 CFR 261.21
Nitrate/Nitrite	-----	-----	EPA 353.2	-----
Non-filterable Residue (TSS)	-----	SM 2540D-2011	-----	-----
pH	-----	SM 4500 H+B-2011 EPA 9040B EPA 9040C	EPA 9040B EPA 9040C	EPA 9045C EPA 9045D
Phenol	-----	EPA 9066	EPA 9066	-----
Reactivity	-----	-----	SW-846 Chapter 7.3	SW-846 Chapter 7.3
Sulfide	-----	EPA 376.1 EPA 376.2 SM 4500 S2D-2011 SM 4500 S2F-2011	-----	-----
Total Residue	-----	SM 2540B-2011	-----	SM 2540G-2011
<b>Metals</b>				
Metals Digestion	-----	EPA 3005A EPA 3010A EPA 3020A	EPA 3010A EPA 3020A	EPA 3050B
Aluminum	-----	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B
Antimony	-----	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B
Arsenic	-----	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B

<u>Parameter/Analyte</u>	<u>Drinking Water</u>	<u>Non-Potable Water</u>	<u>Solid Hazardous Waste</u>	
			<u>Aqueous</u>	<u>Solid</u>
Barium	-----	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B
Beryllium	-----	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B
Boron	-----	EPA 6010C EPA 6010D	EPA 6010C EPA 6010D	EPA 6010C EPA 6010D
Cadmium	-----	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B
Calcium	-----	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B
Chromium	-----	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B
Cobalt	-----	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B
Copper	-----	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B
Iron	-----	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B
Lead	-----	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B
Lithium	-----	EPA 6010C EPA 6010D	EPA 6010C EPA 6010D	EPA 6010C EPA 6010D
Molybdenum	-----	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B
Magnesium	-----	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B

<u>Parameter/Analyte</u>	<u>Drinking Water</u>	<u>Non-Potable Water</u>	<u>Solid Hazardous Waste</u>	
			<u>Aqueous</u>	<u>Solid</u>
Manganese	-----	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B
Mercury	-----	EPA 7470A	EPA 7470A	EPA 7471A EPA 7471B
Nickel	-----	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B
Potassium	-----	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B
Selenium	-----	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B
Silicon	-----	EPA 6010C EPA 6010D	EPA 6010C EPA 6010D	EPA 6010C EPA 6010D
Silver	-----	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B
Sodium	-----	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B
Strontium	-----	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B
Sulfur	-----	EPA 6010C EPA 6010D	EPA 6010C EPA 6010D	EPA 6010C EPA 6010D
Thallium	-----	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B
Thorium	-----	EPA 6010C EPA 6010D	EPA 6010C EPA 6010D	EPA 6010C EPA 6010D
Tin	-----	EPA 6010C EPA 6010D	EPA 6010C EPA 6010D	EPA 6010C EPA 6010D
Titanium	-----	EPA 6010C EPA 6010D	EPA 6010C EPA 6010D	EPA 6010C EPA 6010D
Tungsten	-----	EPA 6010C EPA 6010D	EPA 6010C EPA 6010D	EPA 6010C EPA 6010D

<b>Parameter/Analyte</b>	<b>Drinking Water</b>	<b>Non-Potable Water</b>	<b>Solid Hazardous Waste</b>	
			<b>Aqueous</b>	<b>Solid</b>
Uranium	-----	EPA 6020A EPA 6020B	EPA 6020A EPA 6020B	EPA 6020A EPA 6020B
Vanadium	-----	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B
Zinc	-----	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B	EPA 6010C EPA 6010D EPA 6020A EPA 6020B
Zirconium	-----	EPA 6010C EPA 6010D	EPA 6010C EPA 6010D	EPA 6010C EPA 6010D
<b>Purgeable Organics (Volatiles)</b>				
Volatile Preparation	-----	EPA 5030C	EPA 5030C	EPA 5035A
Acetone	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Acetonitrile	-----	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Acrolein	-----	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Acrylonitrile	-----	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Allyl chloride	-----	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
tert-Amyl Alcohol	-----	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
tert-Amyl Methyl Ether	-----	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
tert-Butyl Alcohol	-----	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
tert-Butyl Formate	-----	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Benzene	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Bromobenzene	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Bromochloromethane	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Bromodichloromethane	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Bromoform	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Bromomethane	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
2-Butanone	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
n-Butylbenzene	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
sec-Butylbenzene	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
tert-Butylbenzene	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Carbon disulfide	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Carbon tetrachloride	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
2-Chloro-1,3-butadiene	-----	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Chloroacetonitrile	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Chlorobenzene	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
1-Chlorobutane	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Chlorodifluoromethane	-----	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Chloroethane	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
2-Chloroethyl Vinyl Ether	-----	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Chloroform	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D

Parameter/Analyte	Drinking Water	Non-Potable Water	Solid Hazardous Waste	
			Aqueous	Solid
1-Chlorohexane	-----	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Chloromethane	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
2-Chlorotoluene	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
4-Chlorotoluene	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Cyclohexane	-----	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Cyclohexanone	-----	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Di-Isopropyl ether	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Dibromochloromethane	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
1,2-Dibromo-3-chloropropane	EPA 524.2	EPA 8260C/D EPA 8011	EPA 8260C/D EPA 8011	EPA 8260C/D
Dibromomethane	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
1,2-Dibromoethane (EDB)	-----	EPA 8260C/D EPA 8011	EPA 8260C/D EPA 8011	EPA 8260C/D
1,2-Dichlorobenzene	-----	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
1,3-Dichlorobenzene	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
1,4-Dichlorobenzene	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
trans-1,4-dichloro-2-butene	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Dichlorodi-fluoromethane	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
1,1-Dichloroethane	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
1,2-Dichloroethane	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
1,1-Dichloroethene	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
cis-1,2-Dichloroethene	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
trans-1,2-Dichloroethene	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Dichlorofluoromethane	EPA 524.2	-----	-----	-----
1,2-Dichloropropane	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
1,3-Dichloropropane	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
2,2-Dichloropropane	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
1,1-Dichloropropene	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
cis-1,3-Dichloropropene	-----	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
trans-1,3-Dichloropropene	-----	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
1,4-Dioxane	-----	EPA 8260C/D EPA 8260C/D SIM	EPA 8260C/D EPA 8260C/D SIM	EPA 8260C/D EPA 8260C/D SIM
Ethanol	-----	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Ethylbenzene	-----	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Ethyl ether	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Ethyl Methacrylate	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Ethyl Tert-Butyl Ether	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Freon-113	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Gasoline Range Organics (GRO) [Volatile Petroleum Hydrocarbons (VPH)]	-----	EPA 8015C EPA 8015D EPA 8260C/D NW TPH-Gx MA VPH AK101	EPA 8015C EPA 8015D EPA 8260C/D NW TPH-Gx MA VPH AK101	EPA 8015C EPA 8015D EPA 8260C/D NW TPH-Gx MA VPH AK101
Heptane	-----	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Hexane	-----	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
2-Hexanone	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D

Parameter/Analyte	Potable Water	Non-Potable Water	Solid Hazardous Waste	
			Aqueous	Solid
Hexachlorobutadiene	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Hexachloroethane	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Isobutyl Alcohol	-----	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Isopropyl Alcohol	-----	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Isopropylbenzene	-----	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
1,4-Isopropyltoluene	-----	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Methylacrylonitrile	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Methyl Acetate		EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Methyl Acrylate	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Methyl Iodide	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Methyl Ethyl ketone	-----	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Methylene Chloride	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Methyl Isobutyl Ketone	-----	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Methyl Methacrylate	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Methyl Tert-Butyl Ether	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
4-Methyl-2-pentanone	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Methylcyclohexane		EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
2-Nitropropane	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Naphthalene	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Pentachloroethane	-----	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Propionitrile	-----	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
n-Propylbenzene	-----	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Styrene	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Tert-Amyl Ethyl Ether		EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
1,1,1,2-Tetrachloroethane	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
1,1,2,2-Tetrachloroethane	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Tetrachloroethene	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Tetrahydrofuran	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Toluene	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
1,2,3-Trichlorobenzene	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
1,2,4-Trichlorobenzene	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
1,1,1-Trichloroethane	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
1,1,2-Trichloroethane	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Trichloroethene	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Trichlorofluoromethane	-----	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
1,2,3-Trichloropropane	-----	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
1,2,4-Trimethylbenzene	-----	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
1,3,5-Trimethylbenzene	-----	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Vinyl Acetate	-----	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Vinyl Chloride	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
Xylenes, Total	-----	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
1,2-Xylene (o-Xylene)	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D
1,3+1,4-Xylene (m+p Xylene)	EPA 524.2	EPA 8260C/D	EPA 8260C/D	EPA 8260C/D

<u><b>Parameter/Analyte</b></u>	<u><b>Potable Water</b></u>	<u><b>Non-Potable Water</b></u>	<u><b>Solid Hazardous Waste</b></u>	
			<u><b>Aqueous</b></u>	<u><b>Solid</b></u>
<b>Extractable Organics (Semivolatiles)</b>				
Acenaphthene	-----	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM
Acenaphthylene	-----	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM
Acetophenone	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
2-Acetylaminofluorene	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Alkylated PAHs	-----	EPA 8270D/E SIM	EPA 8270D/E SIM	EPA 8270D/E SIM
4-Aminobiphenyl	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
2-Amino-4,6-dinitrotoluene	-----	EPA 8330B	EPA 8330B	EPA 8330B
4-Amino-2,6-dinitrotoluene	-----	EPA 8330B	EPA 8330B	EPA 8330B
Aniline	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Anthracene	-----	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM
Atrazine	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Benzaldehyde	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Benzidine	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Benzoic acid	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Benzo (a) anthracene	-----	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM
Benzo (b) fluoranthene	-----	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM
Benzo (k) fluoranthene	-----	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM
Benzo (ghi) perylene	-----	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM
Benzo (a) pyrene	-----	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM
Benzo (e) pyrene	-----	EPA 8270D/E SIM	EPA 8270D/E SIM	EPA 8270D/E SIM
Benzyl Alcohol	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Biphenyl	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
bis (2-Chloroethoxy) Methane	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
bis (2-Chloroethyl) Ether	-----	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM
bis (2-Chloroisopropyl) Ether	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
bis (2-Ethylhexyl) Phthalate	-----	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM
4-Bromophenylphenyl Ether	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Butyl benzyl Phthalate	-----	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM

Parameter/Analyte	Potable Water	Non-Potable Water	Solid Hazardous Waste	
			Aqueous	Solid
Caprolactam	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Carbazole	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
<u>Carbon Range Organics C8-C44 (including subsets of this range i.e. HRO, MRO, ORO, RRO)</u>	-----	EPA 8015C EPA 8015D	EPA 8015C EPA 8015D	EPA 8015C EPA 8015D
4-Chloroaniline	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
4-Chloro-3-methylphenol	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Chlorobenzilate	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
1-Chloronaphthalene	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
2-Chloronaphthalene	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
2-Chlorophenol	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
4-Chlorophenyl phenyl ether	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Chrysene	-----	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM
Cresols (Methyl phenols)	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
cis-/trans-Diallate	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
2,4-Diamino-6-nitrotoluene	-----	EPA 8330B	EPA 8330B	EPA 8330B
2,6-Diamino-4-nitrotoluene	-----	EPA 8330B	EPA 8330B	EPA 8330B
Dibenzo (a,h) acridine	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Dibenzo (a,h) anthracene	-----	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM
Dibenzofuran	-----	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM
1,2-Dichlorobenzene	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
1,3-Dichlorobenzene	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
1,4-Dichlorobenzene	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
3,3'-Dichlorobenzidine	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Diesel Range Organics (DRO) [Extractable Petroleum Hydrocarbons (EPH)]	-----	EPA 8015C EPA 8015D NWTPH DX MA EPH TX1005/1006 AK102/103 AK102/103-SV	EPA 8015C EPA 8015D NWTPH DX MA EPH TX1005/1006 AK102/103 AK102/103-SV	EPA 8015C EPA 8015D NWTPH DX MA EPH TX1005/1006 AK102/103
2,4-Dichlorophenol	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
2,6-Dichlorophenol	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Diethyl Phthalate	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Dimethoate	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
p-Dimethylaminoazobenze	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
7,12-Dimethylbenz (a) anthracene	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
2,4-Dimethylphenol	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Dimethyl Phthalate	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
3,3'-Dimethylbenzidine	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E

<u>Parameter/Analyte</u>	<u>Potable Water</u>	<u>Non-Potable Water</u>	<u>Solid Hazardous Waste</u>	
			<u>Aqueous</u>	<u>Solid</u>
Di-n-butyl Phthalate	-----	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM
Di-n-octyl phthalate	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
3,5-Dinitroaniline	-----	EPA 8330B	EPA 8330B	EPA 8330B
1,3-Dinitrobenzene	-----	EPA 8270D/E EPA 8330B	EPA 8270D/E EPA 8330B	EPA 8270D/E EPA 8330B
1,4-Dinitrobenzene	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
2,4-Dinitrophenol	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
2,4-Dinitrotoluene	-----	EPA 8270D/E EPA 8330B	EPA 8270D/E EPA 8330B	EPA 8270D/E EPA 8330B
2,6-Dinitrotoluene	-----	EPA 8270D/E EPA 8330B	EPA 8270D/E EPA 8330B	EPA 8270D/E EPA 8330B
1,4-Dioxane	-----	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM
Diphenylamine	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Diphenyl ether	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
1,2-Diphenylhydrazine	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Ethyl Methane Sulfonate	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Fluoroanthene	-----	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM
Fluorene	-----	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM
Hexachlorobenzene	-----	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM
Hexachlorobutadiene	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Hexachlorocyclopentadiene	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Hexachloroethane	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Hexachloropropene	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	-----	EPA 8330B	EPA 8330B	EPA 8330B
Indeno (1,2,3-cd) Pyrene	-----	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM
Isodrin	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Isophorone	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E

Parameter/Analyte	Potable Water	Non-Potable Water	Solid Hazardous Waste	
			Aqueous	Solid
Isosafrole	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
3-Methycholanthrene	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
2-Methyl-4,6-dinitrophenol	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Methyl methane sulfonate	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
1-Methylnaphthalene	-----	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM
2-Methylnaphthalene	-----	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM
2-Methylphenol	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
4-Methylphenol	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Naphthalene	-----	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM
1,4-Naphthoquinone	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
1-Naphthylamine	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
2-Naphthylamine	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
4-Nitroquinoline-1-oxide	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
2-Nitroaniline	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
3-Nitroaniline	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
4-Nitroaniline	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Nitrobenzene	-----	EPA 8270D/E EPA 8330B	EPA 8270D/E EPA 8330B	EPA 8270D/E EPA 8330B
Nitroglycerin	-----	EPA 8330B	EPA 8330B	EPA 8330B
2-Nitrophenol	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
4-Nitrophenol	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
2-Nitrotoluene	-----	EPA 8330B	EPA 8330B	EPA 8330B
3-Nitrotoluene	-----	EPA 8330B	EPA 8330B	EPA 8330B
4-Nitrotoluene	-----	EPA 8330B	EPA 8330B	EPA 8330B
5-Nitro-o-toluidine	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
n-Nitroso-di-n-butylamine	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
n-Nitrosodiethylamine	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
n-Nitrosodimethylamine	-----	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM
n-Nitrosomethylethylamine	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
n-Nitrosomorpholine	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
n-Nitrosodi-n-propylamine	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
n-Nitrosodiphenylamine	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
n-Nitrosopiperidine	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
n-Nitrosopyrrolidine	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	-----	EPA 8330B	EPA 8330B	EPA 8330B

Parameter/Analyte	Potable Water	Non-Potable Water	<u>Solid Hazardous Waste</u>	
			<u>Aqueous</u>	<u>Solid</u>
2,2-Oxybis (1-chloropropane)	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Pentachlorobenzene	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Pentachloronitrobenzene	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Pentachlorophenol	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Pentaerythritol Tetranitrate (PETN)	-----	EPA 8330B	EPA 8330B	EPA 8330B
Perylene	-----	EPA 8270D/E SIM	EPA 8270D/E SIM	EPA 8270D/E SIM
Phenacetin	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Phenanthrene	-----	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM
Phenol	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
2-Picoline	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Pronamide	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Pyrene	-----	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM	EPA 8270D/E EPA 8270D/E SIM
Pyridine	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Safrole	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
1,2,4,5- Tetrachlorobenzene	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
2,3,4,6-Tetrachlorophenol	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Tetraethyl dithiopyrophosphate	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Tetraethyl lead	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Tetryl	-----	EPA 8330B	EPA 8330B	EPA 8330B
Thionazin	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
o-Toluidine	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
1,2,4-Trichlorobenzene	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
1,3,5-Trinitrobenzene	-----	EPA 8330B	EPA 8330B	EPA 8330B
2,4,5-Trichlorophenol	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
2,4,6-Trichlorophenol	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
O,O,O-Triethylphosphorothioate	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
2,4,6-Trinitrotoluene	-----	EPA 8330B	EPA 8330B	EPA 8330B
<b>Organochlorine Pesticides</b>				
Aldrin	-----	EPA 8081B	EPA 8081B	EPA 8081B
alpha-BHC	-----	EPA 8081B	EPA 8081B	EPA 8081B
beta-BHC	-----	EPA 8081B	EPA 8081B	EPA 8081B
delta-BHC	-----	EPA 8081B	EPA 8081B	EPA 8081B
gamma-BHC (Lindane)	-----	EPA 8081B	EPA 8081B	EPA 8081B

Parameter/Analyte	Potable Water	Non-Potable Water	<u>Solid Hazardous Waste</u>	
			<u>Aqueous</u>	<u>Solid</u>
alpha-Chlordane	-----	EPA 8081B	EPA 8081B	EPA 8081B
Chlordane (Technical)	-----	EPA 8081B	EPA 8081B	EPA 8081B
Chlorobenzilate	-----	EPA 8081B	EPA 8081B	EPA 8081B
2,4'-DDD	-----	EPA 8081B	EPA 8081B	EPA 8081B
2,4'-DDE	-----	EPA 8081B	EPA 8081B	EPA 8081B
2,4'-DDT	-----	EPA 8081B	EPA 8081B	EPA 8081B
4,4'-DDD	-----	EPA 8081B	EPA 8081B	EPA 8081B
4,4'-DDE	-----	EPA 8081B	EPA 8081B	EPA 8081B
4,4'-DDT	-----	EPA 8081B	EPA 8081B	EPA 8081B
Diallate	-----	EPA 8081B	EPA 8081B	EPA 8081B
1,2-Dibromo-3-chloropropane (DBCP)	-----	EPA 8081B	EPA 8081B	EPA 8081B
Dieldrin	-----	EPA 8081B	EPA 8081B	EPA 8081B
Dinoseb	-----	EPA 8270D/E	EPA 8270D/E	EPA 8270D/E
Endosulfan I (alpha)	-----	EPA 8081B	EPA 8081B	EPA 8081B
Endosulfan II (beta)	-----	EPA 8081B	EPA 8081B	EPA 8081B
Endosulfan Sulfate	-----	EPA 8081B	EPA 8081B	EPA 8081B
Endrin	-----	EPA 8081B	EPA 8081B	EPA 8081B
Endrin Aldehyde	-----	EPA 8081B	EPA 8081B	EPA 8081B
Endrin Ketone	-----	EPA 8081B	EPA 8081B	EPA 8081B
gamma-Chlordane	-----	EPA 8081B	EPA 8081B	EPA 8081B
Heptachlor	-----	EPA 8081B	EPA 8081B	EPA 8081B
Heptachlor Epoxide	-----	EPA 8081B	EPA 8081B	EPA 8081B
Hexachlorobenzene	-----	EPA 8081B	EPA 8081B	EPA 8081B
Hexachlorocyclopentadiene	-----	EPA 8081B	EPA 8081B	EPA 8081B
Isodrin	-----	EPA 8081B	EPA 8081B	EPA 8081B
Methoxychlor	-----	EPA 8081B	EPA 8081B	EPA 8081B
Mirex	-----	EPA 8081B	EPA 8081B	EPA 8081B
Toxaphene	-----	EPA 8081B	EPA 8081B	EPA 8081B
<b>PCBs (Aroclors)</b>				
PCB-1016 (Arochlor)	-----	EPA 8082A	EPA 8082A	EPA 8082A
PCB-1221	-----	EPA 8082A	EPA 8082A	EPA 8082A
PCB-1232	-----	EPA 8082A	EPA 8082A	EPA 8082A
PCB-1242	-----	EPA 8082A	EPA 8082A	EPA 8082A
PCB-1248	-----	EPA 8082A	EPA 8082A	EPA 8082A
PCB-1254	-----	EPA 8082A	EPA 8082A	EPA 8082A
PCB-1260	-----	EPA 8082A	EPA 8082A	EPA 8082A
PCB-1262	-----	EPA 8082A	EPA 8082A	EPA 8082A
PCB-1268	-----	EPA 8082A	EPA 8082A	EPA 8082A
PCB congeners (209)	-----	EPA 1668A EPA 1668C	EPA 1668A EPA 1668C	EPA 1668A EPA 1668C

Parameter/Analyte	Potable Water	Non-Potable Water	<u>Solid Hazardous Waste</u>	
			<u>Aqueous</u>	<u>Solid</u>
<b>Herbicides</b>				
2,4,5-T	-----	EPA 8151A	EPA 8151A	EPA 8151A
2,4,5-TP (Silvex)	-----	EPA 8151A	EPA 8151A	EPA 8151A
2,4-D	-----	EPA 8151A	EPA 8151A	EPA 8151A
2,4-DB	-----	EPA 8151A	EPA 8151A	EPA 8151A
Dalapon	-----	EPA 8151A	EPA 8151A	EPA 8151A
Dicamba	-----	EPA 8151A	EPA 8151A	EPA 8151A
Dichlorprop	-----	EPA 8151A	EPA 8151A	EPA 8151A
Dinoseb	-----	EPA 8151A	EPA 8151A	EPA 8151A
MCPA	-----	EPA 8151A	EPA 8151A	EPA 8151A
MCPP	-----	EPA 8151A	EPA 8151A	EPA 8151A
Pentachlorophenol	-----	EPA 8151A	EPA 8151A	EPA 8151A
<b>PCB Homologues</b>				
Monochlorobiphenyls	-----	EPA 680	EPA 680	EPA 680
Dichlorobiphenyls	-----	EPA 680	EPA 680	EPA 680
Trichlorobiphenyls	-----	EPA 680	EPA 680	EPA 680
Tetrachlorobiphenyls	-----	EPA 680	EPA 680	EPA 680
Pentachlorobiphenyls	-----	EPA 680	EPA 680	EPA 680
Hexachlorobiphenyls	-----	EPA 680	EPA 680	EPA 680
Heptachlorobiphenyls	-----	EPA 680	EPA 680	EPA 680
Octachlorobiphenyls	-----	EPA 680	EPA 680	EPA 680
Nonachlorobiphenyls	-----	EPA 680	EPA 680	EPA 680
Decachlorobiphenyls	-----	EPA 680	EPA 680	EPA 680
<b>Dioxins/Furans</b>				
2,3,7,8-TCDD	EPA 1613B	EPA 8290A	EPA 8290A	EPA 8290A
2,3,7,8-TCDF	-----	EPA 8290A	EPA 8290A	EPA 8290A
1,2,3,7,8-PeCDF	-----	EPA 8290A	EPA 8290A	EPA 8290A
2,3,4,7,8-PeCDF	-----	EPA 8290A	EPA 8290A	EPA 8290A
1,2,3,7,8-PeCDD	-----	EPA 8290A	EPA 8290A	EPA 8290A
1,2,3,4,7,8-HxCDF	-----	EPA 8290A	EPA 8290A	EPA 8290A
1,2,3,6,7,8-HxCDF	-----	EPA 8290A	EPA 8290A	EPA 8290A
2,3,4,6,7,8-HxCDF	-----	EPA 8290A	EPA 8290A	EPA 8290A
1,2,3,7,8,9-HxCDF	-----	EPA 8290A	EPA 8290A	EPA 8290A
1,2,3,4,7,8,-HxCDD	-----	EPA 8290A	EPA 8290A	EPA 8290A
1,2,3,6,7,8-HxCDD	-----	EPA 8290A	EPA 8290A	EPA 8290A
1,2,3,7,8,9-HxCDD	-----	EPA 8290A	EPA 8290A	EPA 8290A
1,2,3,4,6,7,8-HpCDF	-----	EPA 8290A	EPA 8290A	EPA 8290A
1,2,3,4,7,8,9-HpCDF	-----	EPA 8290A	EPA 8290A	EPA 8290A
1,2,3,4,6,7,8-HpCDD	-----	EPA 8290A	EPA 8290A	EPA 8290A
OCDF	-----	EPA 8290A	EPA 8290A	EPA 8290A
OCDD	-----	EPA 8290A	EPA 8290A	EPA 8290A
Total HpCDD	-----	EPA 8290A	EPA 8290A	EPA 8290A
Total HpCDF	-----	EPA 8290A	EPA 8290A	EPA 8290A
Total HxCDD	-----	EPA 8290A	EPA 8290A	EPA 8290A
Total HxCDF	-----	EPA 8290A	EPA 8290A	EPA 8290A
Total PeCDD	-----	EPA 8290A	EPA 8290A	EPA 8290A

<u>Parameter/Analyte</u>	<u>Potable Water</u>	<u>Non-Potable Water</u>	<u>Solid Hazardous Waste</u>	
			<u>Aqueous</u>	<u>Solid</u>
Total PeCDF	-----	EPA 8290A	EPA 8290A	EPA 8290A
Total TCDD	-----	EPA 8290A	EPA 8290A	EPA 8290A
Total TCDF	-----	EPA 8290A	EPA 8290A	EPA 8290A
<b>Misc. Headspace Analysis</b>				
Carbon dioxide	-----	RSK-175	RSK-175	-----
Ethane	-----	RSK-175	RSK-175	-----
Ethene	-----	RSK-175	RSK-175	-----
Methane	-----	RSK-175	RSK-175	-----
<b>Hazardous Waste Characteristics</b>				
Toxicity Characteristic Leaching Procedure	-----	-----	EPA 1311	EPA 1311
Synthetic Precipitation Leaching Procedure	-----	-----	EPA 1312	EPA 1312
ASTM Leaching Procedure	-----	-----	ASTM D3987-85	ASTM D3987-85
<b>Other</b>				
Perchlorate	-----	EPA 6850	EPA 6850	EPA 6850
Hydrazine	-----	EPA 8315A MOD	EPA 8315A MOD	EPA 8315A MOD
Formaldehyde	-----	-----	EPA 8315A	EPA 8315A
Methylhydrazine	-----	EPA 8315A MOD	EPA 8315A MOD	EPA 8315A MOD
1,1-Dimethylhydrazine	-----	EPA 8315A MOD	EPA 8315A MOD	EPA 8315A MOD
Volatile Preparation	-----	EPA 5030A EPA 5030C	EPA 5030A EPA 5030C	EPA 5035 EPA 5035A
Organic Extraction/Cleanup	-----	EPA 3510C EPA 3511 EPA 3660B, 3620C, 3665A	EPA 3510C EPA 3511 EPA 3660B, 3620C, 3665A	EPA 3546 EPA 3550C EPA 3660B, 3620C, 3665A, 3640A

<u>Parameter/Analyte</u>	<u>Drinking Water</u>	<u>Nonpotable Water</u>	<u>Solid Haz.Waste</u>
<b>Per and Polyfluoroalkyl Substances (PFAS)</b>			
N-ethyl Perfluorooctane-Sulfonamidoacetic Acid (NetFOSAA)	EPA 537 EPA 537.1	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15
N-methyl Perfluorooctane-Sulfonamidoacetic Acid (NMeFOSAA)	EPA 537 EPA 537.1	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15
Perfluorobutanesulfonic Acid (PFBS)	EPA 537 EPA 537.1 EPA 533	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15
Perfluorodecanoic Acid (PFDA)	EPA 537 EPA 537.1 EPA 533	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15

<b><u>Parameter/Analyte</u></b>	<b><u>Drinking Water</u></b>	<b><u>Nonpotable Water</u></b>	<b><u>Solid Haz.Waste</u></b>
Perfluorododecanoic Acid (PFDoDA)	EPA 537 EPA 537.1 EPA 533	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15
Perfluoroheptanoic Acid (PFHpA)	EPA 537 EPA 537.1 EPA 533	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15
Perfluorohexanesulfonic Acid (PFHxS)	EPA 537 EPA 537.1 EPA 533	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15
Perfluorohexanoic Acid (PFHxA)	EPA 537 EPA 537.1 EPA 533	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15
Perfluorononanoic Acid (PFNA)	EPA 537 EPA 537.1 EPA 533	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15
Perfluorooctanesulfonic Acid (PFOS)	EPA 537 EPA 537.1 EPA 533	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15
Perfluorooctanoic Acid (PFOA)	EPA 537 EPA 537.1 EPA 533	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15
Perfluorotetradecanoic Acid (PFTeDA)	EPA 537 EPA 537.1	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15
Perfluorotridecanoic Acid (PFTrDA)	EPA 537 EPA 537.1	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15
Perfluoroundecanoic Acid (PFUnDA)	EPA 537 EPA 537.1 EPA 533	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid (HFPODA)	EPA 537.1	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	EPA 537.1 EPA 533	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	EPA 537.1 EPA 533	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	EPA 537.1 EPA 533	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15
Perfluoro-n-butanoic Acid (PFBA)	EPA 533	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15
Perfluoro-n-pentanoic Acid (PFPeA)	EPA 533	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15

<u>Parameter/Analyte</u>	<u>Drinking Water</u>	<u>Nonpotable Water</u>	<u>Solid Haz.Waste</u>
8:2 Fluorotelomersulfonic Acid (8:2FTS)	-----	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15
4:2 Fluorotelomersulfonic Acid (4:2-FTS)	-----	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15
Perfluoropentanesulfonic Acid (PFPeS)	EPA 533	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15
6:2 Fluorotelomersulfonic Acid (6:2-FTS)	-----	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15
Perfluoroheptanesulfonic Acid (PFHpS)	EPA 533	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15
Perfluorononanesulfonic Acid (PFNS)	-----	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15
Perfluorodecanesulfonic Acid (PFDS)	-----	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15
10:2 Fluorotelomersulfonic Acid (10:2-FTS)	-----	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15
Perfluorododecanesulfonic Acid (PFDoDS)	-----	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15
Perfluorohexadecanoic Acid (PFHxDA)	-----	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15
Perfluoroctadecanoic Acid (PFODA)	-----	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15
Perfluoroctanesulfonamide (PFOSA)	-----	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol (NMePFOSAE)	-----	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15
N-methylperfluoro-1-octanesulfonamide (NMePFOSA)	-----	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15
(N-ethylperfluoro-1-octanesulfonamido)-ethanol (NEtPFOSAE)	-----	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15
N-ethylperfluoro-1-octanesulfonamide (NEtPFOSA)	-----	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15	PFAS by LCMSMS Compliant with QSM 5.3 Table B-15
Perfluoro(2-propoxypropanoic) acid	EPA 533	-----	-----
1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)	EPA 533	-----	-----
1H,1H,2H,2H-perfluoroctanesulfonic acid (6:2)	EPA 533	-----	-----
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	EPA 533	-----	-----

<u>Parameter/Analyte</u>	<u>Drinking Water</u>	<u>Nonpotable Water</u>	<u>Solid Haz.Waste</u>
PFECA B	EPA 533	-----	-----
PFECA F	EPA 533	-----	-----
PFECA A	EPA 533	-----	-----
PES	EPA 533	-----	-----

**End of DoD ELAP section of scope**

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**Start of KY, WY, and ISO 17025 section of scope**

In addition, in recognition of the successful completion of the A2LA evaluation process (including an assessment of the laboratory's compliance with ISO IEC 17025:2017, the 2009 TNI Environmental Testing Laboratory Standard, and for the test methods applicable to Kentucky Statute KRS 224.60-130(2)(a), and for the test methods applicable to the Wyoming Storage Tank Remediation Laboratory Accreditation Program), accreditation is granted to this laboratory to perform recognized EPA methods using the following testing technologies and in the analyte categories identified below:

Testing Technologies

Atomic Absorption/ICP-AES Spectrometry, ICP-MS Spectrometry, Gas Chromatography, Gas Chromatography/Mass Spectrometry, Gravimetry, High Performance Liquid Chromatography, Ion Chromatography, Misc.-Electronic Probes (pH, F<sup>-</sup>, O<sub>2</sub>), Oxygen Demand, Spectrophotometry (Visible), Spectrophotometry (Automated), Titrimetry, TCLP, Total Organic Carbon, Turbidity, Liquid Chromatography/Mass Spectrometry/Mass Spectrometry, High Resolution Gas Chromatography/Mass Spectrometry

<u>Parameter/Analyte</u>	<u>Tissue</u>	<u>Nonpotable Water</u>	<u>Solid Hazardous Waste</u>	
			<u>Aqueous</u>	<u>Solid</u>
<b>Other</b>				
Perchlorate	Food & Food Products EPA 6850	EPA 6850	EPA 6850	EPA 6850
Hydrazine	-----	EPA 8315A MOD	EPA 8315A MOD	EPA 8315A MOD
Methylhydrazine	-----	EPA 8315A MOD	EPA 8315A MOD	EPA 8315A MOD
1,1-Dimethylhydrazine	-----	EPA 8315A MOD	EPA 8315A MOD	EPA 8315A MOD
Volatile Preparation	-----	EPA 5030A EPA 5030C	EPA 5030A EPA 5030C	EPA 5035 EPA 5035A
Organic Extraction/ Cleanup	EPA 3546 EPA 3550C EPA 3660B EPA 3620C EPA 3665A EPA 3640A	EPA 3510C EPA 3511 EPA 3660B EPA 3620C EPA 3665A EPA 3665A	EPA 3510C EPA 3511 EPA 3660B EPA 3620C EPA 3665A EPA 3665A	EPA 3546 EPA 3550C EPA 3660B EPA 3620C EPA 3665A EPA 3640A

<u><b>Parameter/Analyte</b></u>	<u><b>Tissue</b></u>	<u><b>Nonpotable Water</b></u>	<u><b>Solid Hazardous Waste</b></u>			
			<u><b>Aqueous</b></u>	<u><b>Solid</b></u>		
<b>Kentucky UST Program</b>						
<b>Metals</b>						
Arsenic	-----	-----	EPA 6010B	EPA 6010B		
Barium	-----	-----	EPA 6010B	EPA 6010B		
Cadmium	-----	-----	EPA 6010B	EPA 6010B		
Chromium	-----	-----	EPA 6010B	EPA 6010B		
Lead	-----	-----	EPA 6010B	EPA 6010B		
Mercury	-----	-----	EPA 7470A	EPA 7471A		
Selenium	-----	-----	EPA 6010B	EPA 6010B		
Silver	-----	-----	EPA 6010B	EPA 6010B		
<b>Purgeable Organics (Volatile)</b>						
Diesel Range Organics (DRO)	-----	EPA 8015C EPA 8015D	EPA 8015C EPA 8015D	EPA 8015C EPA 8015D		
Gasoline Range Organics (GRO)	-----	EPA 8015C EPA 8015D	EPA 8015C EPA 8015D	EPA 8015C EPA 8015D		
<b>Wyoming Storage Tank Program</b>						
<b>Metals</b>						
Cadmium	-----	-----	EPA 6010C	EPA 6010C		
Chromium	-----	-----	EPA 6010C	EPA 6010C		
Chromium (Total, hexavalent)	-----	-----	EPA 7196A	EPA 7196A		
Lead	-----	-----	EPA 6010C	EPA 6010C		
<b>Purgeable Organics (Volatile)</b>						
Volatile Preparation	-----	-----	EPA 5030C EPA 5030C	EPA 5035 EPA 5035A		
Benzene	-----	-----	EPA 5030C EPA 8260D	EPA 8260D		
1,2-Dichloroethane	-----	-----	EPA 8260D	EPA 8260D		
1,2-Dibromoethane	-----	-----	EPA 8011	EPA 8011		
Diisopropyl Ether	-----	-----	EPA 5030C EPA 8260D	EPA 8260D		
Ethyl Benzene	-----	-----	EPA 5030C EPA 8260D	EPA 8260D		
Ethyl tert-butyl Ether	-----	-----	EPA 8260D	EPA 8260D		
Methyl tert-butyl Ether	-----	-----	EPA 5030C EPA 8260D	EPA 8260D		
Naphthalene	-----	-----	EPA 5030C EPA 8260D	EPA 8260D		
Toluene	-----	-----	EPA 5030C EPA 8260D	EPA 8260D		
Tert-amyl Methyl Ether	-----	-----	EPA 5030C EPA 8260D	EPA 8260D		
Tert-butyl Alcohol	-----	-----	EPA 5030C EPA 8260D	EPA 8260D		

<u>Parameter/Analyte</u>	<u>Tissue</u>	<u>Nonpotable Water</u>	<u>Solid Hazardous Waste</u>	
			<u>Aqueous</u>	<u>Solid</u>
Xylenes, total	-----	-----	EPA 5030C EPA 8260D	EPA 8260D
Gasoline Range Organics (GRO C6-C10)	-----	-----	EPA 5030C EPA 8260D	EPA 8260D
<b>Extractable Organics (Semivolatiles)</b>				
Diesel Range Organics (DRO C10-C32)	-----	-----	EPA 8015C w/ EPA 3630 cleanup	EPA 8015C w/ EPA 3630 cleanup

<b>Food and Feed (WHO 29)</b>	<b>Food/Feed</b>
2,3,7,8-TCDD	EPA 1613B
2,3,7,8-TCDF	EPA 1613B
1,2,3,7,8-PeCDF	EPA 1613B
2,3,4,7,8-PeCDF	EPA 1613B
1,2,3,7,8-PeCDD	EPA 1613B
1,2,3,4,7,8-HxCDF	EPA 1613B
1,2,3,6,7,8-HxCDF	EPA 1613B
2,3,4,6,7,8-HxCDF	EPA 1613B
1,2,3,7,8,9-HxCDF	EPA 1613B
1,2,3,4,7,8-HxCDD	EPA 1613B
1,2,3,6,7,8-HxCDD	EPA 1613B
1,2,3,7,8,9-HxCDD	EPA 1613B
1,2,3,4,6,7,8-HpCDF	EPA 1613B
1,2,3,4,7,8,9-HpCDF	EPA 1613B
1,2,3,4,6,7,8-HpCDD	EPA 1613B
OCDF	EPA 1613B
OCDD	EPA 1613B
<b>Food and Feed (WHO 29)</b>	<b>Food/Feed</b>
Total HpCDD	EPA 1613B
Total HpCDF	EPA 1613B
Total HxCDD	EPA 1613B
Total HxCDF	EPA 1613B
Total PeCDD	EPA 1613B
Total PeCDF	EPA 1613B
Total TCDD	EPA 1613B
Total TCDF	EPA 1613B
6 marker PCBs (PCB28, PCB52, PCB101, PCB138, PCB153, and PCB180)	EPA 1668A EPA 1668C



<u>Parameter/Analyte</u>	<u>Tissue</u>	<u>Nonpotable Water</u>	<u>Solid Hazardous Waste</u>	
			<u>Aqueous</u>	<u>Solid</u>
12 Dioxin-like PCBs (dl-PCBs)/coplanar PCBs (PCB77, PCB81, PCB105, PCB114, PCB118, PCB123, PCB126, PCB156, PCB157, PCB167, PCB169, and PCB189)	EPA 1668A EPA 1668C	-----	-----	-----

<u>Parameter/Analyte</u>	<u>Drinking Water</u>	<u>Nonpotable Water</u>	<u>Solid Haz.Waste</u>
<b>Per and Polyfluoroalkyl Substances (PFAS)</b>			
N-ethyl perfluorooctane-sulfonamidoacetic acid (NetFOSAA)	EPA 537 Ver. 1.1 EPA 537.1	EPA 537 Ver.1.1 Mod	EPA 537 Ver.1.1 Mod
N-methyl perfluorooctane-sulfonamidoacetic acid (NMeFOSAA)	EPA 537 Ver. 1.1 EPA 537.1	EPA 537 Ver.1.1 Mod	EPA 537 Ver.1.1 Mod
Perfluorobutanesulfonic acid (PFBS)	EPA 537 Ver. 1.1 EPA 537.1	EPA 537 Ver.1.1 Mod	EPA 537 Ver.1.1 Mod
Perfluorodecanoic acid (PFDA)	EPA 537 Ver. 1.1 EPA 537.1	EPA 537 Ver.1.1 Mod	EPA 537 Ver.1.1 Mod
Perfluorododecanoic acid (PFDoDA)	EPA 537 Ver. 1.1 EPA 537.1	EPA 537 Ver.1.1 Mod	EPA 537 Ver.1.1 Mod
Perfluoroheptanoic acid (PFHpA)	EPA 537 Ver. 1.1 EPA 537.1	EPA 537 Ver.1.1 Mod	EPA 537 Ver.1.1 Mod
Perfluorohexanesulfonic acid (PFHxS)	EPA 537 Ver. 1.1 EPA 537.1	EPA 537 Ver.1.1 Mod	EPA 537 Ver.1.1 Mod
Perfluorohexanoic acid (PFHxA)	EPA 537 Ver. 1.1 EPA 537.1	EPA 537 Ver.1.1 Mod	EPA 537 Ver.1.1 Mod
Perfluorononanoic acid (PFNA)	EPA 537 Ver. 1.1 EPA 537.1	EPA 537 Ver.1.1 Mod	EPA 537 Ver.1.1 Mod
Perfluorooctanesulfonic acid (PFOS)	EPA 537 Ver. 1.1 EPA 537.1	EPA 537 Ver.1.1 Mod	EPA 537 Ver.1.1 Mod
Perfluorooctanoic acid (PFOA)	EPA 537 Ver. 1.1 EPA 537.1	EPA 537 Ver.1.1 Mod	EPA 537 Ver.1.1 Mod
Perfluorotetradecanoic acid (PFTeDA)	EPA 537 Ver. 1.1 EPA 537.1	EPA 537 Ver.1.1 Mod	EPA 537 Ver.1.1 Mod
Perfluorotridecanoic acid (PFTrDA)	EPA 537 Ver. 1.1 EPA 537.1	EPA 537 Ver.1.1 Mod	EPA 537 Ver.1.1 Mod
Perfluoroundecanoic acid (PFUnDA)	EPA 537 Ver. 1.1 EPA 537.1	EPA 537 Ver.1.1 Mod	EPA 537 Ver.1.1 Mod
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid (HFPODA)	EPA 537.1	EPA 537 Ver.1.1 Mod	EPA 537 Ver.1.1 Mod

<u>Parameter/Analyte</u>	<u>Drinking Water</u>	<u>Nonpotable Water</u>	<u>Solid Haz.Waste</u>
4,8-Dioxa-3H-perfluorononanoic acid (DONA)	EPA 537.1	EPA 537 Ver.1.1 Mod	EPA 537 Ver.1.1 Mod
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	EPA 537.1	EPA 537 Ver.1.1 Mod	EPA 537 Ver.1.1 Mod
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUDS)	EPA 537.1	EPA 537 Ver.1.1 Mod	EPA 537 Ver.1.1 Mod
Perfluoro-n-butanoic acid (PFBA)	-----	EPA 537 Ver.1.1 Mod	EPA 537 Ver.1.1 Mod
Perfluoro-n-pentanoic acid (PFPeA)	-----	EPA 537 Ver.1.1 Mod	EPA 537 Ver.1.1 Mod
8:2 Fluorotelomersulfonic acid (8:2FTS)	-----	EPA 537 Ver.1.1 Mod	EPA 537 Ver.1.1 Mod
4:2 Fluorotelomersulfonic acid (4:2-FTS)	-----	EPA 537 Ver.1.1 Mod	EPA 537 Ver.1.1 Mod
Perfluoropentanesulfonic acid (PFPeS)	-----	EPA 537 Ver.1.1 Mod	EPA 537 Ver.1.1 Mod
6:2 Fluorotelomersulfonic acid (6:2-FTS)	-----	EPA 537 Ver.1.1 Mod	EPA 537 Ver.1.1 Mod
Perfluoroheptanesulfonic acid (PFHpS)	-----	EPA 537 Ver.1.1 Mod	EPA 537 Ver.1.1 Mod
Perfluorononanesulfonic acid (PFNS)	-----	EPA 537 Ver.1.1 Mod	EPA 537 Ver.1.1 Mod
Perfluorodecanesulfonic acid (PFDS)	-----	EPA 537 Ver.1.1 Mod	EPA 537 Ver.1.1 Mod
10:2 Fluorotelomersulfonic acid (10:2-FTS)	-----	EPA 537 Ver.1.1 Mod	EPA 537 Ver.1.1 Mod
Perfluorododecanesulfonic acid (PFDoDS)	-----	EPA 537 Ver.1.1 Mod	EPA 537 Ver.1.1 Mod
Perfluorohexadecanoic acid (PFHxDA)	-----	EPA 537 Ver.1.1 Mod	EPA 537 Ver.1.1 Mod
Perfluorooctadecanoic acid (PFODA)	-----	EPA 537 Ver.1.1 Mod	EPA 537 Ver.1.1 Mod
Perfluorooctanesulfonamide (PFOSA)	-----	EPA 537 Ver.1.1 Mod	EPA 537 Ver.1.1 Mod
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol (NMePFOSAE)	-----	EPA 537 Ver.1.1 Mod	EPA 537 Ver.1.1 Mod
N-methylperfluoro-1-octanesulfonamide (NMePFOSA)	-----	EPA 537 Ver.1.1 Mod	EPA 537 Ver.1.1 Mod
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol (NEtPFOSAE)	-----	EPA 537 Ver.1.1 Mod	EPA 537 Ver.1.1 Mod
N-ethylperfluoro-1-octanesulfonamide (NEtPFOSA)	-----	EPA 537 Ver.1.1 Mod	EPA 537 Ver.1.1 Mod

**End of KY, WY, and ISO 17025 section of scope**



## Accredited Laboratory

A2LA has accredited

**EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC**  
Lancaster, PA

for technical competence in the field of  
**Environmental Testing**

In recognition of the successful completion of the A2LA evaluation process that includes an assessment of the laboratory's compliance with ISO/IEC 17025:2017, the 2009 TNI Environmental Testing Laboratory Standard, and the requirements of the Department of Defense Environmental Laboratory Accreditation Program (DoD ELAP) as detailed in version 5.3 of the DoD/DOE Quality System Manual for Environmental Laboratories (QSM), accreditation is granted to this laboratory to perform recognized EPA methods as defined on the associated A2LA Environmental Scope of Accreditation. This accreditation demonstrates technical competence for this defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).



Presented this 28<sup>th</sup> day of January 2021.

A blue ink signature of a person's name, appearing to read "John Doe".

Vice President, Accreditation Services  
For the Accreditation Council  
Certificate Number 1.01  
Valid to November 30, 2022

For the tests to which this accreditation applies, please refer to the laboratory's Environmental Scope of Accreditation.

**Worksheet #12 Measurement Performance Criteria Table**

Eurofins Lancaster Laboratories Environmental, LLC (ELLE)  
 2425 New Holland Pike, Lancaster, PA 17601  
 717-656-2300

Matrix	Soil	Scan 12154, 13707			
Analytical Group	PCB Congeners				
Concentration Level	Low				
Sampling Procedure	Analytical Method/SOP	Data Quality Indicators (DQIs)	Measurement Performance Criteria	QC Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A) or Both (S&A)
Soil sampling	SW-846 1668A/C; WI9432	Accuracy	Method defined limits	Labeled compounds	A
Soil sampling	SW-846 1668A/C; WI9432	Accuracy/Bias/Precision	Recovery limits and RPDs per QSM 5.3. Laboratory statistical limits for compounds not in QSM 5.3	On-going Precision Recovery (OPR) Sample	S & A
Soil sampling	SW-846 1668A/C; WI9432	Accuracy/Bias/Precision	Recovery limits and RPDs per QSM 5.3. Laboratory statistical limits for compounds not in QSM 5.3	Matrix Spike/Matrix Spike Duplicate, if required by project	S & A
Soil sampling	SW-846 1668A/C; WI9432	Accuracy/Laboratory Contamination	No analytes detected > 1/2 LOQ or >1/10 the amount measured in any sample	Method Blank	A
Soil sampling	SW-846 1668A/C; WI9432	Precision	RPD as set by project	Field Duplicate	S & A
Soil sampling	SW-846 1668A/C; WI9432	Accuracy/Field Contamination	No detected target compounds	Field Blank	S & A
Soil sampling	SW-846 1668A/C; WI9432	Completeness	As determined by the project	Reported Sample Data	S & A
Soil sampling	SW-846 1668A/C; WI9432	Bias/Holding Time	≤365 days	Reported Sample Data	A
Soil sampling	SW-846 1668A/C; WI9432	Sensitivity	Detection limits ≤ to PALs	Detection limits	S

**Worksheet #12 Measurement Performance Criteria Table**

**Eurofins Lancaster Laboratories Environmental, LLC (ELLE)**  
**2425 New Holland Pike, Lancaster, PA 17601**  
**717-656-2300**

Matrix	Tissue				
Analytical Group	OC Pesticides				
Concentration Level	Low				
Sampling Procedure	Analytical Method/SOP	Data Quality Indicators (DQIs)	Measurement Performance Criteria	QC Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A) or Both (S&A)
Tissue collection	SW-846 8081B/WI9232	Accuracy	Recovery limits per QSM 5.3. Laboratory statistical limits for surrogates not in QSM 5.3.	Surrogate Spike	A
Tissue collection	SW-846 8081B/WI9232	Accuracy/Bias/Precision	Recovery limits and RPDs per QSM 5.3. Laboratory statistical limits for compounds not in QSM 5.3.	Laboratory Control Spike/Matrix Spike and their Duplicates	S & A
Tissue collection	SW-846 8081B/WI9232	Accuracy/Laboratory Contamination	No analytes detected > 1/2 LOQ or >1/10 the amount measured in any sample or 1/10 the regulatory limit, whichever is greater	Method Blank	A
Tissue collection	SW-846 8081B/WI9232	Precision	RPD as set by project	Field Duplicate	S & A
Tissue collection	SW-846 8081B/WI9232	Accuracy/Field Contamination	No detected target compounds	Field Blank	S & A
Tissue collection	SW-846 8081B/WI9232	Accuracy/Transport Contamination	No detected target compounds	Trip Blank	A
Tissue collection	SW-846 8081B/WI9232	Completeness	As determined by the project	Reported Sample Data	S & A
Tissue collection	SW-846 8081B/WI9232	Bias/Holding Time	≤14 days until extraction/40 days to analysis	Reported Sample Data	A
Tissue collection	SW-846 8081B/WI9232	Sensitivity	Detection limits ≤ to PALs	Detection limits	S

## Worksheet #12 Measurement Performance Criteria Table

**Eurofins Lancaster Laboratories Environmental, LLC (ELLE)**  
**2425 New Holland Pike, Lancaster, PA 17601**  
**717-656-2300**

Matrix	Solid				
Analytical Group	Metals- Hg				
Concentration Level	Low				
Sampling Procedure	Analytical Method/SOP	Data Quality Indicators (DQIs)	Measurement Performance Criteria	QC Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A) or Both (S&A)
Soil sampling	SW-846 7471B WI7965	Accuracy/Bias/Precision	Recovery limits per QSM 5.3. RPD ≤20%	Laboratory Control Spike/Matrix Spike and their Duplicates	A
Soil sampling	SW-846 7471B WI7965	Accuracy/Laboratory Contamination	No analytes detected > 1/2 RL or >1/20 the amount measured in any sample	Method Blank	A
Soil sampling	SW-846 7471B WI7965	Precision	RPD ≤20%	Lab Duplicate	S & A
Soil sampling	SW-846 7471B WI7965	Precision	RPD as set by project	Field Duplicate	S & A
Soil sampling	SW-846 7471B WI7965	Accuracy/Field Contamination	No detected target compounds	Field Blank	S & A
Soil sampling	SW-846 7471B WI7965	Completeness	As determined by the project	Reported Sample Data	S & A
Soil sampling	SW-846 7471B WI7965	Bias/Holding Time	≤ 28 days	Reported Sample Data	A
Soil sampling	SW-846 7471B WI7965	Sensitivity	Detection limits ≤ to PALs	Detection limits	S

**Worksheet #12 Measurement Performance Criteria Table**

Eurofins Lancaster Laboratories Environmental, LLC (ELLE)  
 2425 New Holland Pike, Lancaster, PA 17601  
 717-656-2300

Matrix	Soil				
Analytical Group	Moisture				
Concentration Level	Low				
Sampling Procedure	Analytical Method/SOP	Data Quality Indicators (DQIs)	Measurement Performance Criteria	QC Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A) or Both (S&A)
Soil sampling	SM 2540 G-1997 %Moisture Calc; WI10697	Accuracy/Bias	Laboratory statistical windows	LCS	A
Soil sampling	SM 2540 G-1997 %Moisture Calc; WI10697	Precision	Method specific RPD	Lab Duplicate	S & A
Soil sampling	SM 2540 G-1997 %Moisture Calc; WI10697	Precision	RPD as set by project	Field Duplicate	S & A
Soil sampling	SM 2540 G-1997 %Moisture Calc; WI10697	Completeness	As determined by the project	Reported Sample Data	S & A
Soil sampling	SM 2540 G-1997 %Moisture Calc; WI10697	Bias/Holding Time	≤ 7 days	Reported Sample Data	A
Soil sampling	SM 2540 G-1997 %Moisture Calc; WI10697	Sensitivity	Detection limits ≤ to PALs	Detection limits	S

## Appendix G: Power Analysis

## **APPENDIX G. Development of Power Curves for Bradford Island Fish Sampling Program**

In support of the study design for the fish tissue sampling for Smallmouth bass, historical data for total PCBs in Smallmouth bass collected from the Forebay and Upriver Reference area were used to generate power curves. The power curves provide a basis for determining the number of samples needed to compare the Site to a reference condition (a reference area or a selected tissue value) and to compare tissue PCB concentrations in bass collected in Fall 2020 to Spring 2022. Note that in the current design, each data point will represent total PCBs in a single, whole fish.

Power analysis was conducted prior to the Fall 2020 sampling effort (attached to this memo). For that effort, historical data for total PCBs in bass collected during the 2006, 2008, and 2011 sampling efforts were used to provide input data for the power analysis. Three scenarios were evaluated prior to the Fall sampling including:

1. 2011 Forebay vs. 2011 Reference (low forebay site mean and standard deviation)
2. 2006, 2008, 2011 Forebay vs. 2011 Reference (higher site mean and standard deviation)
3. 2006, 2008, 2011 Forebay vs. a set value (hypothetical tissue value of 100 µg/kg)

The predicted power for 40 samples for the three scenarios were 92%, 89%, and 80%, respectively. Note that these comparisons are between the Forebay and the upstream reference area. The observed power for Fall 2020 (based on the Fall 2020 results), when compared to the 2011 Reference and the set value of 100 µg/kg was greater than 88% for both the entire Forebay dataset and the Bradford Island dataset (Table 1).

**Table 1. Power Observed in 2020 Sampling**

<b>Location</b>	<b>Year</b>	<b>Mean (µg/kg PCBs)</b>	<b>SD</b>	<b>Power Compared to 2011 Reference</b>	<b>Power Compared to Set Value (100 µg/kg)</b>
Reference	2011	63	87		
Forebay Censored <sup>1</sup>	2020	475	1188	93%	88%
Bradford Island Censored <sup>2</sup>	2020	936	1615	96%	95%

1 All data from the Forebay sampled in 2020 included, one data point censored (11,588 µg/kg)

2 All data from the Bradford Island sampled in 2020 included, one data point censored (11,588 µg/kg)

For the purposes of the 2022 Spring sampling, additional power analysis was conducted to take advantage of the 2020 data collected in Fall and to address the DQOs posed in the Spring sampling QAPP, including an evaluation of current tissue concentrations relative to historical concentrations, relative to “reference”, and relative to concentrations observed in Fall 2020.

This analysis includes data collected during historical sampling efforts (2006, 2008, and 2011) and the Fall 2020 data set. Total PCB concentrations observed in bass during these different sampling efforts are summarized in Table 2. Complete data sets were used for the upstream reference area and the Forebay reference. The Forebay datasets from both 2006, 2011, and 2020 included data points that were extremely high ( $>11,000 \mu\text{g/kg PCBs}$ ). These data points were considered outliers and were removed from the data set for the purposes of this analysis, since the variability would result in very high estimates of standard error and very low estimates of power. If these high concentrations are still present in fish tissue, decisions are not likely to be made based on statistical analysis.

**Table 2. Data Sets Used for Power Calculations**

Location	Year	Mean ( $\mu\text{g}/\text{kg PCBs}$ )	SD	n	Range ( $\mu\text{g}/\text{kg PCBs}$ )
Upstream Reference	2011	63	87	19	17 – 407
Forebay Censored	2011	55	65	13	13 – 277
Forebay Combined High Values Censored	2006 - 2011	341	614	32	13 – 2,482
Forebay Censored <sup>1</sup>	Fall 2020	475	1,188	79	1 – 7,649
Bradford Island Censored <sup>2</sup>	Fall 2020	936	1,615	39	2 – 7,649
Forebay Reference <sup>3</sup>	Fall 2020	56	133	19	6 - 502

1 All data from the Forebay sampled in 2020 included, one data point censored ( $11,588 \mu\text{g}/\text{kg}$ )

2 All data from the Bradford Island subarea sampled in 2020 included, one data point censored ( $11,588 \mu\text{g}/\text{kg}$ )

3 Forebay reference subarea sampled in 2020, one data point censored ( $852 \mu\text{g}/\text{kg}$ )

Three general types of power curves were generated. The first scenario was a comparison between the Fall 2020 Forebay/Bradford Island tissue concentrations and those observed in the 2011 Upstream Reference data set. The second was a comparison between Bradford Island and the Forebay Reference. The third was a comparison of both the Fall 2020 Forebay and Bradford Island datasets to a threshold concentration. Power calculations included the proposed sampling design of 80 samples from the Forebay (all subareas) and 40 samples to be collected from the Bradford Island subarea.

### **Scenario 1: Site vs Historical Reference**

The reference mean was based on the 2011 Reference data. While this value of 63 µg/kg was based on the Cascade Locks reference site, the summary statistics for this area are similar to those of the 2011 censored data set – which generally represents the Forebay without the extremely high values (mean = 55 µg/kg; SD: 77 µg/kg).

Two treatment data sets were considered in the scenario, the 2020 Forebay and the 2020 Bradford Island subarea. The treatment mean for the Forebay was 475 µg/kg total PCBs, whereas the Bradford Island subarea was 936 µg/kg. These values were higher and the datasets more variable than the forebay data used in the previous power analysis (mean 100 µg/kg; SD 77µg/kg).

#### ***Input Information for Curve 1:***

Hypothesis: Is the mean PCB tissue concentration in SMB from the Forebay significantly different from the 2011 Upstream Reference?

2011 Reference Mean: 63 µg/kg (based on 2011 Reference data)

Fall 2020 Forebay Mean: 475 µg/kg (based on the full Fall forebay)

Standard Deviation: 1,188 µg/kg

Alpha = 0.05

#### ***Input Information for Curve 2:***

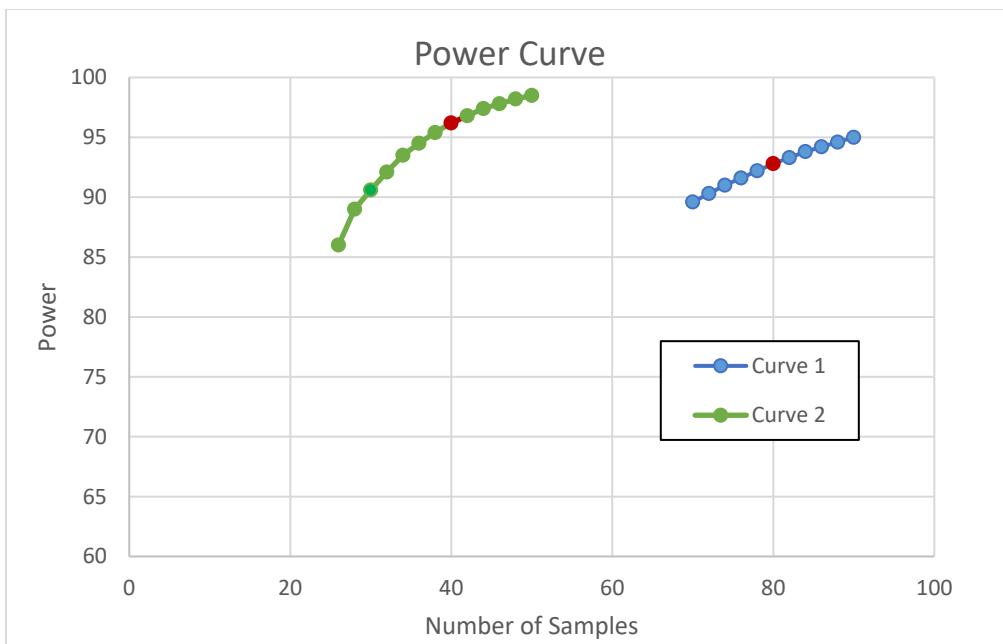
Hypothesis: Is the mean PCB tissue concentration in SMB from Bradford Island significantly different from the 2011 Upstream Reference?

2011 Reference Mean: 63 µg/kg (based on 2011 Reference data)

Fall 2020 Bradford Island Mean: 936 µg/kg

Standard Deviation: 1,615 µg/kg

Alpha = 0.05



**Figure 1. Power Curves for Comparison between 2020 Bradford Island and Forebay to the 2011 Upriver Reference, Total PCBs in Smallmouth Bass**

### Scenario 2: 2020 Bradford Island Compared to 2020 Forebay Reference

Two Forebay Reference values were used for this scenario – the mean value for the 2020 Forebay Reference (56 µg/kg total PCB) and the 95 UCL for the Forebay Reference values (189 µg/kg).

For this scenario, the Site mean was based on the 2020 Fall Bradford Island dataset (341 µg/kg total PCB) and standard deviation (614 µg/kg). This data provided higher mean and standard deviation scenario for Bradford Island and might represent a Spring data set that includes intermediately elevated fish tissue concentrations (100 to 1,000 µg/kg total PCB).

#### ***Input Information for Curve 1:***

Hypothesis: Is mean PCB tissue concentration in SMB from Bradford Island significantly different from the Forebay Reference mean?

Forebay Reference Mean: 56 µg/kg

Bradford Island Mean: 936 µg/kg

Standard Deviation: 1,615 µg/kg

Alpha = 0.05

***Input Information for Curve 2:***

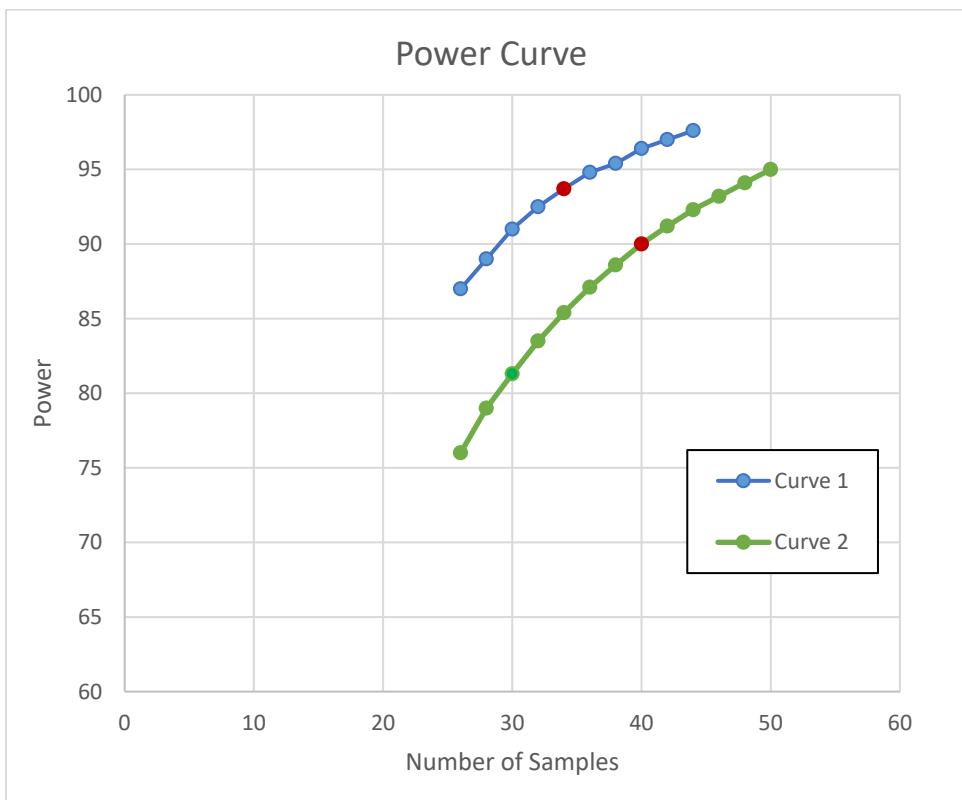
Hypothesis: Is mean PCB tissue concentration in SMB from Bradford Island significantly different from the Forebay Reference UCL?

Forebay Reference UCL: 186 µg/kg

Bradford Island Mean: 936 µg/kg

Standard Deviation: 1,615 µg/kg

Alpha = 0.05



**Figure 2. Power Curves for Comparison between 2020 Bradford Island and Forebay Reference, Total PCBs in Smallmouth Bass**

### **Scenario 3: Site vs Critical Value**

A critical tissue value as a point of reference has been proposed in lieu of using a reference-based sample. For the purpose of this power analysis, the critical tissue value was 100 µg/kg, based on an NOAEL proposed by USFWS. The value that is ultimately used for the site may differ.

Power curves were developed for all fish sampled in the Forebay in Fall 2020, as well as the Bradford Subarea.

#### ***Input Information for Curve 1:***

Hypothesis: Is mean PCB tissue concentration in SMB from the Forebay significantly different from a critical tissue value of 100 µg/kg total PCBs?

Critical Value: 100 µg/kg

Bradford Island Mean: 475 µg/kg

Standard Deviation: 1,188 µg/kg

Alpha = 0.05

#### ***Input Information for Curve 2:***

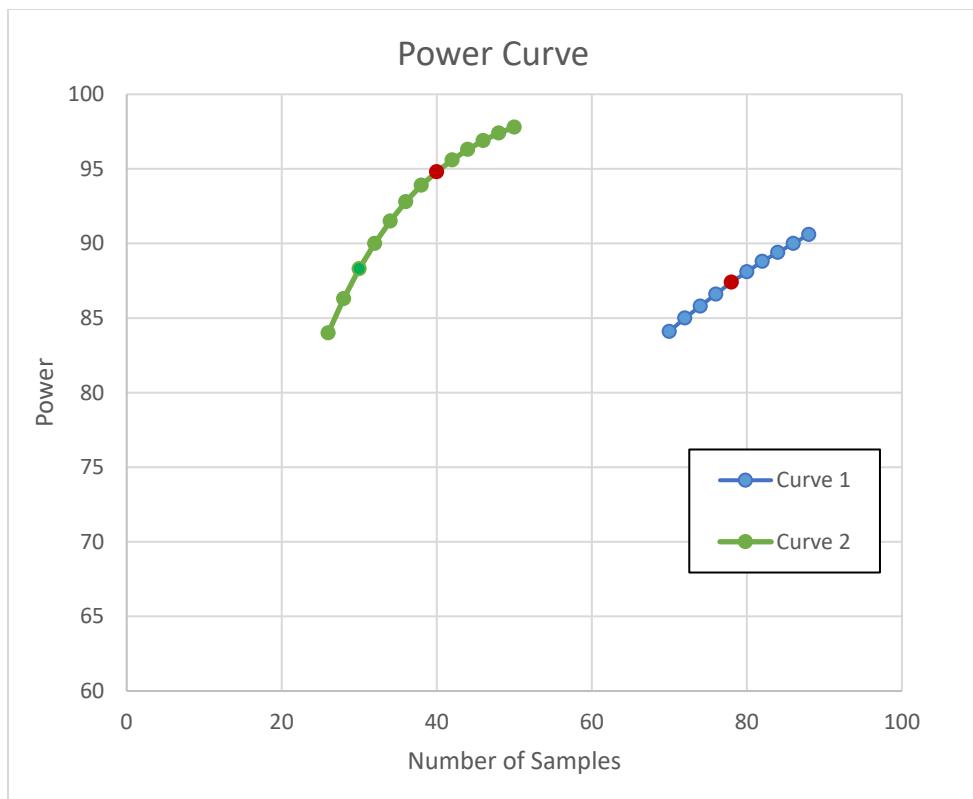
Hypothesis: Is mean PCB tissue concentration in SMB from Bradford Island significantly different from a critical tissue value of 100 µg/kg total PCBs?

Critical Value: 100 µg/kg

Bradford Island Mean: 936 µg/kg

Standard Deviation: 1,615 µg/kg

Alpha = 0.05



**Figure 3. Power Curves for Comparison between 2020 Bradford Island and Forebay to a Critical Tissue Value, Total PCBs in Smallmouth Bass**



## **APPENDIX D. Development of Power Curves for Bradford Island Fish Sampling Program**

In support of the study design for the fish tissue sampling for Smallmouth bass, historical data from Forebay and Reference area were used to generate power curves. The power curves provide a basis for determining the number of samples that will be needed to compare the Forebay to a reference condition (whether that be a reference area mean or a comparison value). Note that in the current design, each data point will represent a single, whole fish.

Historical data for Total PCBs from the 2011 fish sampling effort and from the 2006 and 2008 sampling effort were used to provide input data for the power analysis. This included the mean, standard deviation (SD), and sample numbers (n) (Table 1). The complete data sets were used from the reference area. The Forebay datasets from both 2006 and 2011 included data points that were extremely high (>19,000 µg/kg Total PCBs). These data points were considered outliers and were removed from the data set for the purposes of this analysis, since the variability would result in very high estimates of standard error and very low estimates of power. If these high concentrations are still present in fish tissue, decisions are not likely to be made based on statistical analysis. Summary statistics are presented in Table 1. The distribution of Total PCB tissue concentrations for each of the data sets is presented in Figure 1.

**Table 1. Data Sets Used for Power Curves**

Location	Year	Mean (µg/kg Total PCBs)	SD	n	Range (µg/kg Total PCBs)
Reference	2011	63	87	19	17-407
Reference	2008	82	106	19	22-499
Forebay Censored	2011	55	65	13	13-277
Forebay Censored	2006	593	764	17	32-2482
2011 Reference and Forebay Censored Combined	2011	60	77	34	13-407
Forebay Combined High Values Censored	2006 - 2011	341	614	32	13-2482

- Censored values have highest values removed (all values >19,000 µg/kg)

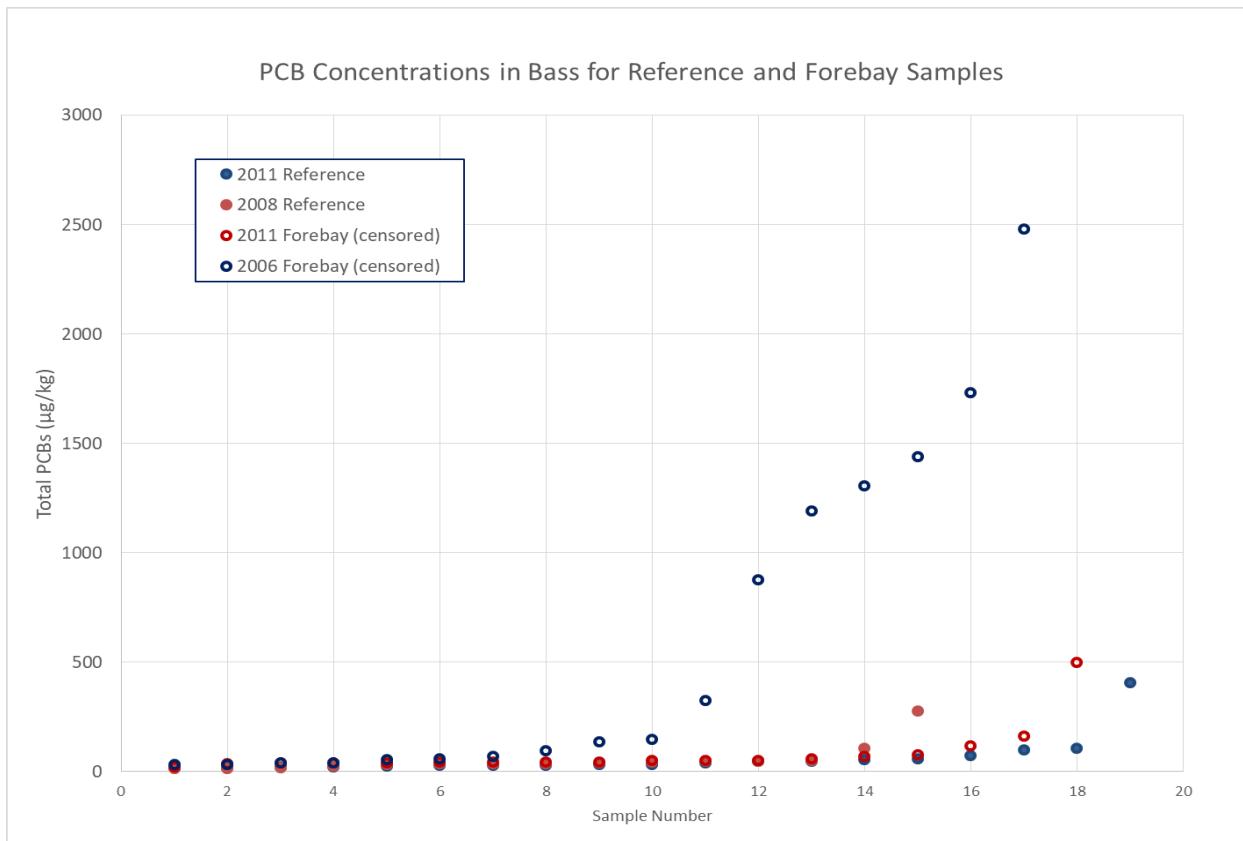


Figure 1. Distribution of Reference and Forebay Data Used in Power Analysis

For the purposes of the upcoming sampling, two power curves were generated. The first was intended to support a comparison between the Forebay and Reference. The second was to represent a more variable data set in the Forebay compared to a threshold concentration.

### Scenario 1: Forebay 1 vs Reference

The reference mean was based on the 2011 Reference data. The Reference area mean of 63 µg/kg is similar to the 2011 censored data set for the Forebay without the extremely high values (mean = 55 µg/kg; SD: 77 µg/kg).

The treatment mean for this scenario, Forebay 1, (100 µg/kg) was an estimated low-end value that we would need to distinguish from Reference. This would represent a condition where the fish tissue concentrations were similar to 2011 in the absence of the extremely high values observed in 2011. This estimated value was also the 95% UCL for the reference data indicating that the number of samples should be sufficient to distinguish between reference and a value above the 95% UCL (100 µg/kg).

The Standard Deviation (77 µg/kg) used in this scenario was based on the combined 2011 Reference and 2011 Forebay Censored dataset. There was substantial overlap of these two data sets that appear to represent the Reference condition and provided an estimate of variation for a population of 34 fish. While this dataset did include all fish from the reference area (e.g. one value of 407 µg/kg), it provided a conservative level of variation that might represent a future condition. In other words, the data is further processed to remove values certain values, the estimate of power might be overestimated and the number of samples needed might be underestimated.

***Input Information for Curve 1:***

Hypothesis: Is mean PCB tissue concentration in Smallmouth bass from the Forebay significantly different from the Reference?

Reference Mean: 63 µg/kg (based on 2011 Reference data)

Forebay Mean: 100 µg/kg (estimated value; 2011 Reference 95% UCL)

Standard Deviation: 77 µg/kg (based on 2011 Forebay data set w/o 4 points (>30,000 µg/kg))

Alpha = 0.05

***Scenario 2: Forebay 2 vs Reference***

The reference mean for this scenario was based on the 2011 Reference data and was the same value used in Scenario 1.

For this scenario, the Forebay 2 mean (341 µg/kg) and standard deviation (614 µg/kg) were based on Total PCB concentrations from the Forebay in 2006 and 2011, with the highest values (>19,000 µg/kg) removed. This data provided higher mean and standard deviation scenario, and might represent a future Forebay data set that includes intermediately elevated fish tissue concentrations (500 to 5,000 µg/kg PCB).

***Input Information for Curve 2:***

Hypothesis: Is mean PCB tissue concentration in Smallmouth bass from the Forebay significantly different from the Reference?

Reference Mean: 63 µg/kg (based on 2011 Reference Mean)

Forebay Mean: 341 µg/kg (combined 2006/2011 Forebay data without six points (>19,000 µg/kg))

Standard Deviation: 614 µg/kg (based on combined 2006 and 2011 Forebay data set without six points (>19,000 µg/kg))

Alpha = 0.05

### **Curve 3: Forebay vs Critical Value**

A critical tissue value as a point of reference has been proposed in lieu of using a reference-based sample. For the purpose of this power analysis, the critical tissue value was 100 µg/kg, based on a No Observed Adverse Effects Level proposed by USFWS. The value that is ultimately used for the site may differ.

For this power curve, the Forebay mean (341 µg/kg) and standard deviation (614 µg/kg) were based on Total PCB concentrations from the Forebay in 2006 and 2011, with the highest values (>19,000 µg/kg) removed. This data provided higher mean and standard deviation, and might represent a future Forebay data set that includes intermediately elevated fish tissue concentrations (500 to 5,000 µg/kg Total PCBs).

#### ***Input Information for Curve 3:***

Hypothesis: is mean in Forebay significantly different from a Threshold of 100 µg/kg.

Historical Mean: 100 µg/kg (based on 2011 Reference mean)

Forebay Mean: 341 µg/kg (based on combined 2006 and 2011 Forebay mean without six points (>19,000 µg/kg))

Standard Deviation: 614 µg/kg (based on combined 2006 and 2011 Forebay mean without six points (>19,000 µg/kg))

Alpha = 0.05

The three power curves are shown on Figure 2. The power curves show the number of samples (along the x-axis) that would be needed to achieve different levels of power (along y-axis) for each scenario presented above. Based on the current sampling design of 40 samples in the Forebay, the power for the three scenarios ranges from approximately 80 to 93%. For comparisons to a reference mean of 63 µg/kg, the proposed sample number should be sufficient to support statistical comparison of the Forebay and reference population. For a comparison to a threshold value of 100 µg/kg, increasing the sample number to 50 to 60 samples would provide more power. However, these curves were generated based on a two-way comparison and a comparison to a threshold value would likely be conducted as a one-way comparison. The current sample estimate should be a conservative estimate of sample number for a one-way comparison.

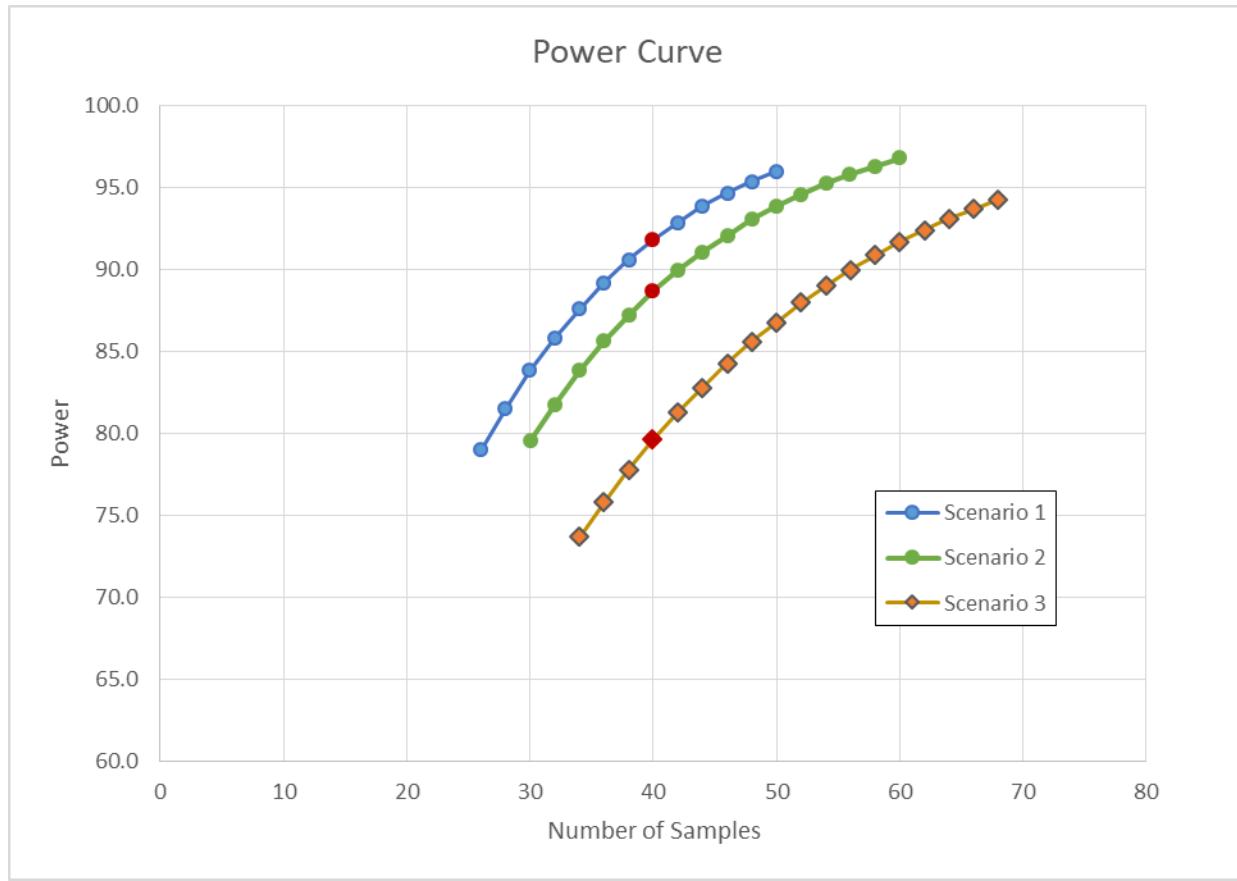


Figure 2. Power Curves for Smallmouth Bass at the Forebay.